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ABSTRACT

The report relates the experience of contractors with the Manpower Administration of the Department of Labor in providing adult basic education to manpower program clients in research and demonstration projects. It summarizes the findings and progress of several experimental projects from the initial efforts under the Manpower Development and Training Act of 1962 to those still underway as the Comprehensive Employment and Training Act of 1973 came into force. Drawing on experiences from the programs described, the focus of the report is on ways to provide adults with academic skills. Among the topics considered are: individualized instruction, programed instruction, diagnostic and evaluative tests, learning motivation, behavioral objectives, learning environment, teacher training, use of tutors, counseling and supportive services, English as a second language, and projects of special significance. The report points to many unresolved problems and to the need for further research to document the teaching techniques, materials, and environments that work best for particular kinds of clients. Appended are brief discussions of related activities in manpower programs administered by the Department of Labor and of relevant research by the Office of Education. (Author/PR)

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Basic Education In Manpower Programs: The R&D Experience

MANPOWER RESEARCH MONOGRAPH NO.38

U.S. DEPARTMENT OF LABOR
Peter J. Brennan, Secretary
Manpower Administration
William H. Kolberg
Assistant Secretary for Manpower

1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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PREFACE

This report relates the experience of contractors with the Manpower Administration of the U.S. Department of Labor in providing adult basic education to manpower program clients in research and demonstration projects. It covers the activities of more than a decade, from the initial efforts under the Manpower Development and Training Act of 1962 to those still underway as the Comprehensive Employment and Training Act of 1973 comes into force. The report makes plain the critical need for improving the academic skills of many individuals whom these legislative acts were designed to serve by helping them toward economic independence and satisfying working lives. It summarizes the findings of several experimental projects and the progress which has been made in this difficult and complex area.

At the same time, the report points to many unresolved problems and to the need for further research to document the teaching techniques, materials, and environments that work best for particular kinds of clients. It is thus offered as a guide both to program managers faced with supplying adult basic education services and to researchers striving to add to the fund of knowledge.

The report was prepared by Mary F. Davies of the Office of Manpower Research and Development, Office of Policy, Evaluation and Research, with major assistance from Charles Phillips of the same office.

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INTRODUCTION

As they assume the major responsibility for providing manpower services to the economically disadvantaged under the Comprehensive Employment and Training Act of 1973, State and local government units are confronted with a longstanding problem. Many of the individuals whom CETA is designed to serve are barred from desirable jobs and from skill training by their inability to read and write with proficiency or to perform simple arithmetical computations. These educational deficiencies among members of manpower program target groups were perceived soon after the Manpower Development and Training Act was enacted in 1962, and few of those charged with its administration were prepared for the discovery.

Experience under MDTA quickly revealed the need for basic education associated with skill training. In fact, during the first year of MDTA activities, only one in every eight persons screened was qualified for training.[1] Pioneering demonstration projects, devised to find ways of helping those with very severe job handicaps, also showed that project clients who could not read or handle numbers confidently could not be trained successfully.

Testimony by the administrators of one of those projects[2] helped to persuade the Congress that the MDTA should be amended (in December 1963) to provide basic education for those who needed it in order to profit from skill training; training allowances were extended for 20 additional weeks to allow for the acquisition of academic skills. As new manpower programs were added to the original MDTA training—Job Corps, Neighborhood Youth Corps (NYC), the Concentrated Employment Program (CEP), the Work Incentive (WIN) Program for welfare recipients, and others—basic education was frequently included among program offerings in response to very evident need. A contractor who evaluated a number of manpower programs in several locations concluded that among manpower services offered "in general, the most vital and most productive have been basic education and language training for those who needed it and skill training for those who have received it."[3]

This need has hardly abated over the past decade. Although the general level of educational achievement in the United States has moved steadily upward, nevertheless more than three-quarters of a million persons dropped out of school short of obtaining a high school diploma during the year ending in October 1973. Moreover, surveys of adult literacy levels by Louis Harris Associates in 1970 and 1971 found 18.5 million adult Americans exhibiting some degree of illiteracy and over 5.5 million experiencing considerable difficulty with reading. According to the National Institute of Education, an estimated 18 million adults cannot read well enough to file applications for medicaid, social security, bank loans, or drivers' licenses.[4]

As further evidence of the seriousness of the problem, testing of various groups of manpower program enrollees has demonstrated repeatedly that the number of school grades completed is no measure of performance. For example, in an evaluation of basic education offerings in MDTA skills centers, it was found that the average school attainment level reported by the trainees was 10.8 grades, with only 8 percent at or below the 8th-grade level and 45 percent at the 12th grade or higher. Nevertheless, scores on standard reading and math achievement tests placed them at an average grade level of 7.6, with 58 percent at or below the 8th grade and only 15 percent at the 11th-grade level or higher.[5]

[1] *Manpower Research and Training Under the Manpower Development and Training Act, A Report by the Secretary of Labor* (Washington: U.S. Department of Labor, March 1964).

[2] Norfolk Demonstration Manpower Project (no. 1, app. A).

[3] *Total Impact of Manpower Programs: A Four-City Case Study* (Salt Lake City: Olympus Research Corp., August 1971).

[4] "NIE: Its History and Programs" (Washington: U.S. Department of Health, Education, and Welfare, National Institute of Education, Office of Public Information, Feb. 28, 1974). (Draft.)

[5] *MDTA Basic Education Study, Final Report* (Arlington, Va.: North American Rockwell Information Systems Co., April 1973). Reading scores averaged grade 7.4, math scores, 7.7.

Another example of the discrepancy between years of school completed and performance on tests is provided by the Training and Technology project at Oak Ridge, Tenn., where a large majority of the trainees enrolled over the past 6 years have been high school graduates. A few have also had some college experience, but their mean score on standardized tests has been below the 8th-grade level, averaging 7.6 in reading and 7.7 in math.

The past decade has seen increasing national awareness of the seriousness of educational deficiencies in the face of expanded technological requirements. At the same time, widespread efforts to teach adults basic academic skills have demonstrated the difficulty and complexity of the undertaking. Thus, to identify the problem and make provisions for dealing with it have not been to resolve it. Assured methods for teaching all illiterate adults to read have not been demonstrated. However, important progress has been made in identifying critical areas for investigation—materials, methods, and management of the instruction process—and guidelines for further progress are emerging.

Therefore, the time appears ripe for surveying the lengthening road traveled in Manpower Administration research and development (R&D) projects in the quest for remediation and for assessing outcomes. For, as an increasing number of experiments have tested ways to solve the employment problems of minorities and such groups as inner-city youth, prison inmates, and the rural poor, significant resources have been devoted to adult basic education efforts. No policy decision to research this area was made, but over the years since 1963, academic instruction of various kinds has been a component of some 20 demonstration projects—most of them involving skill training—and the concern of a number of research studies. (See appendix A.) The cost of designing and developing the academic instruction cannot be extracted from the total cost of R&D projects, but it undoubtedly amounts to some millions of dollars.

The account of Manpower Administration R&D activities in adult basic education (ABE) presented here is supplemented by brief discussions of related activities in manpower programs administered by the Department of Labor and of relevant research by the Office of Education in the Department of Health, Education, and Welfare. The monograph, however, is patently not a comprehensive treatment of a complex subject that is engaging the attention of many educators and other social scientists.[6] Rather it endeavors to make a contribution to phrasing both questions and answers in the ongoing "search for new knowledge needed to make educational opportunity truly equal" in America called for by the President in his 1970 message to the Congress on education reform. The focus here is on ways to provide adults with academic skills, with particular reference to adult basic education as job preparation.

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[6] For example, a 1967 survey of 10 Federal agencies, sponsored by the Office of Education, identified 28 different programs with ABE components, including 6 operated by the Department of Labor. See *Inventory of Federally-Supported Adult Education Programs. Report to the President's National Advisory Committee on Adult Basic Education* (New York: Greenleigh Associates, Inc., January 1968).

BASIC EDUCATION IN THE R&D PROGRAM

"Basic education," "adult basic education," "remedial education"—or sometimes "prevocational training"—are terms used somewhat interchangeably. As applied to R&D manpower projects, basic education refers to instruction in reading, writing, and computational skills given to persons 16 years of age and over. On occasion, the curriculum has included subjects such as social studies and "life skills." As used here, basic education embraces not only the teaching of simple skills to the illiterate and nearly illiterate but also the raising of literacy levels as well as preparation for passing the GED (General Educational Development test) in order to receive a certificate of high school equivalency. In one project, the focus of the instruction was on preparation for college entrance and subsequent success in college. In all cases, the context is a manpower one, and the end objective of the basic education instruction is *job preparation.*

The methods, materials, settings, and varieties of instructional staff have varied widely. Most projects have used commercially developed instructional materials, and many have made modifications and adaptations in those materials keyed to their particular enrollees (often to make the presentation more "adult"). Some have used elaborate "hardware"; more, with an eye on costs, have restricted themselves to "software," which is far less expensive. There have been tutoring, academic game playing, counseling, and supportive services in varying degrees and ratios.

Young workers were the primary target of many of the early demonstration projects offering basic education among the manpower services designed for the hard-core unemployed.[7] The bulk of these projects had urban settings, but rural youth were also involved, as were inmates of a few correctional institutions. More recently, experiments in teaching basic education have been carried out among the Spanish-speaking, among workers in entry-level jobs in the southern paper industry, among individuals with very low-level (below fifth-grade) reading ability, among NYC enrollees, among individuals of low academic achievement but with potential for higher education—and so on through a very wide gamut of personal characteristics and settings.

Most project directors have claimed sizable grade-level gains for their clients or cited other evidence of positive attainment, but no consensus has been formulated and documented on what works best for whom. On the other hand, some areas of agreement can be discerned, some successes have been documented, and some promising activities of considerable substance are underway. Project directors agree that strong project management giving special attention to basic education is a must and further that training the teacher in managing the sequence in which learning experiences are presented is crucial. Describing the approaches to basic education that apparently work, in the interest of furnishing guidance to future activities, is the objective of this paper.

As noted, R&D efforts to overcome educational deficiencies have persisted over a decade. Not surprisingly, they have yielded a specialized vocabulary and some guiding concepts, including the premise that such deficiencies are but one component of the personal-social-psychological handicap inhibiting the disadvantaged in locating jobs and in making some progress up the job ladder. The findings which have evolved include the following:

The Need for Individualized Instruction[8]

Since individuals (the disadvantaged as well as others) have varying learning rates, spans of attention, and ways

[7] Six of these projects are described in *Breakthrough for Disadvantaged Youth* (Washington: U.S. Department of Labor, Manpower Administration, 1969).

[8] This finding emerges from most of the projects listed in app. A.

of learning, and since any group of program enrollees is likely to include persons with different levels of competence in specific subject areas, instruction must be tailored to these individual differences. While this observation might appear to be a truism, all practitioners of instruction in basic education stress its fundamental importance.

One contractor has described this near-universal objective of managers of remedial education as, in the end product, but "a direction which recognizes the inherent differences in the learning behaviors of individuals; focuses on those individuals who have not responded to conventional education and training methods; innovates to accommodate individual learning rates, styles, and motivations; and shifts the responsibility of learning from the teacher and/or trainer to the learner."[9]

The now-accepted "gospel" about individualized instruction is well stated in the following 10 specifications for such a system:[10]

The instructional system shall make it possible for individuals to progress at their own rates, to begin the learning sequence when it seems educationally desirable to do so, and to continue the instructional process until mastery has been achieved.

The objectives of instruction shall be relevant to the immediate and long-term needs of the learner, and the learner shall be cognizant of this relevance.

Educational objectives shall be stated in unambiguous terms which make clear the intellectual or behavioral competencies to be developed by the learner.

The instructional system shall maximize the student's active involvement in the learning process.

The instructional system shall provide accurate, timely and formative feedback to the learner regarding his progress toward learning goals.

The instructional system shall be designed to maximize the principles of positive reinforcement, and eliminate or minimize those aspects known or suspected to be adverse to the learner.

The instructional system shall insure appropriate sequencing of learning experiences and shall be capable of diagnosis of learner deficiencies and of adjusting the instructional sequence appropriately.

The instructional system will obtain reliable and timely information on individual student learning progress, and shall make adaptations appropriate to the individual learner.

In the development of instructional goals and processes, the instructional system shall take into account the total environment in which the student learns.

The instructional system shall have a recognizable "style," a cognitive structure sufficiently obvious to provide meaning or relevance to learning and to encourage continuous commitment to learning throughout life.

To recognize the importance of individualization and to articulate its requirements have not, however, been to effectuate it, although some R&D projects have made strides in developing a technology for individualizing instruction.

The Need for Diagnosis and Prescription; Programed Instruction[11]

The concept of individualization recognizes differences in the academic achievements manpower clients bring to basic education instruction, not only in grade level but in specific areas of weakness within a given norm of achievement. For example, a student may test at a sixth-grade level in fractions but at fourth grade in decimals. Such differences can be uncovered through refined diagnostic tests. His or her "prescription" will be a unit of study tailored to the specific weakness, avoiding the boredom of repeating what is already known. Also, the student should not have to wait for the next class test to determine that he or she has mastered decimals but should proceed immediately after the feedback from the individual test to the next unit of materials.

The commitment to diagnosis and prescription has led to the near-universal use of programed instruction material, often called "PI." Whether developed in simple paper and pencil form or for audiovisual presentation, PI has certain characteristics which set it apart from conventional instructional materials. Unlike conventional materials, which are intended to supplement other

[9] *The Individualized Manpower Training System—from Concept to Implementation* (Montgomery, Ala.: Technical Education Research Centers, Inc., April 1973).

[10] Ikenberry, S. O., *Institutional Systems in Higher Education—Specifications for Individualization* (University Park, Pa.: The Pennsylvania State University, Center for Study of Higher Education, 1970.)

[11] This finding emerges from the following projects listed in app. A: YMCA Youth Project (3), Inmate Training at Draper (4), Training and Technology (TAT) (6), Basic Education in the Manpower Process (7), Project PEACE (10), Basic Occupational Language Training Program (BOLT) (11), Accelerated Learning Experiment (12), Experimental Manpower Laboratory for Corrections (EMLC) (15), Potential of NYC-2 (16), College Adapter Program (CAP) (17), NYC-2 Goes to a Community College (22), Individualized Manpower Training System (IMTS) (24), and New Education Program (NEP) (25).

instruction, PI is developed for independent study and provides all the necessary subject matter and directions for proceeding to master it. Since PI is self-instructional, the student works through it at his own pace without the pressures of peer competition or the embarrassing experience of publicly disclosing ignorance. Moreover, the self-pacing characteristic frees the student from being held back by the slower learning pace of classmates.

PI materials are tailored to behavioral objectives which specify what the student is expected to learn, and they are carefully sequenced. Proponents maintain that, as the student continually interacts with and responds to the material, attention is maintained at a high level. PI also provides continuous and immediate feedback on progress through frequent, brief tests. Thus, a student moves through the material at a pace he chooses and with constant success, building always on previously acquired knowledge.

PI lends itself to "modularization"—subdivision into units of study of appropriate length to meet specific objectives. The student can start with a PI lesson at his or her level of proficiency, and depending on the subject matter and objective, continue to the end or leave when he attains the needed skill.

PI was initially developed in the Armed Forces, and the principle of teaching new learning skills in small successive steps culminating in a defined end has been widely accepted for about two decades. A range of commercially developed PI materials is on the market.[12] Moreover, training teachers to produce programed materials has proved feasible, and a significant amount of such material has been produced in the demonstration programs, often in the form of modification of commercial materials.

[12] For example, a handbook published by the Clearinghouse for Offender Literacy Programs in January 1974 lists and describes some 80 reading programs and systems, issued by 40 publishers. See *A Reading Program Resource Manual for Adult Basic Education*. The handbook gives no guidelines for use of the programs nor any information on results of validations of their use. A catalog of materials, *Programmed Learning and Individually Paced Instruction* (Bibliography), 5th Ed., has been published by Carl H. Hendershot.

The Need for Improved Diagnostic and Evaluation Tests

Instruments capable of determining the learning needs and achievement of enrollees in reading, language arts, and math are essential. They are needed for overall program design, for the placement of students in units of study, for guidance in individualizing instruction, and as a reference point for checking progress. Both students and teachers need to pinpoint specific needs and problems as they go along, while students need the experience of knowing that they have met short-term goals in pursuing the longer term goal of acquiring academic skills for vocational purposes. In popular use are the Test for Adult Basic Education (TABE) and the Adult Basic Literacy Examination (ABLE), while the Stanford Achievement Test (SAT) is also relied upon, especially for initial placement of students.

The Job Corps uses both commercially developed tests and three which it has developed to identify reading weaknesses in subareas including, for example, consonant sounds, vowels, and prefixes and suffixes. The SAT is not used for initial placement in units of study. However, Job Corps has found that individuals who do well on the Job Corps series and also score at the ninth-grade level or higher on the SAT can usually be readied for taking the GED with only preparation for taking that particular test.

R&D contractors agree that none of the diagnostic tests so far developed and commercially available are wholly adequate to guide the prescription of instructional material with the desired degree of precision.[13] This is true of tests in basic math, language, and especially reading.

Motivation to Learn

The standard approach to learning has already failed with many manpower program enrollees and resulted in

[13] Especially these projects listed in app. A: Inmate Training at Draper (4), EMLC (15), IMTS (24), and NEP (25).

a conviction of inability to learn and defensive I-won't-try attitudes. Experience has shown that this lack of motivation to learn can frequently be overcome by the repeated experience of success in learning through the proper use of programed material. Thus, a stimulus to learn is built into the learning process itself as the student is helped in selecting achievable goals that have relevance and motivational value to him."[14]

Many researchers stress that overcoming the trainee's negative attitude toward learning means involving him in the diagnosis of his needs, the development of his educational plan, and the evaluation of his progress. They agree that each trainee should be allowed to progress at his own pace, under no pressure to compete with fellow enrollees.

Another variation from traditional teaching which stimulates learning is closely linking the instruction to an occupational skill. The apparent usefulness of the subject matter being offered furnishes a strong motivation for its mastery, and cooperation between academic and vocational instructors holds mutual benefits for learning in both areas.[15]

Teaching to Behavioral Objectives

Increasingly, educators working with the disadvantaged are shifting their attention from the academic skills needed to do well on standard achievement tests to those needed to function in society. The new focus finds expression in the phrase "teaching to behavioral objectives." This amounts to determining, for example, the specific kinds of information needed to get a job or to handle one's personal affairs and teaching those concrete behaviors involved in acquiring and applying the information. Also implied is measuring, in quantifiable terms, the learning which takes place and offering frequent reinforcement for successful performance. A major research endeavor in this area funded by the Office of Education is described in a later section.

The work of both the Experimental Manpower Laboratory for Corrections in developing basic education for the offender population and the Technical Education Research Centers in developing an individualized instructional system is based on this concept of teaching to behavioral objectives. These two projects are subsequently discussed in some detail.

Importance of the Learning Environment

"Learning environment" can encompass diverse aspects of the learning situation. One is whether enrollment is voluntary. (Voluntary enrollments are generally more productive.) Another is whether enrollees are paid while learning. (Manpower program enrollees generally are paid allowances.) And a third is the time of day at which the instruction is offered. (After working hours may be a poor time.[16]) The important consensus is that a separate facility for academic instruction, well stocked and properly arranged, is essential to an individualized self-learning approach. Appendix B describes such a learning center.

The terms "learning resource center," "learning laboratory," and "tutoring center" have been applied to the facility. It should be arranged (and managed) to accommodate the needs of fast learners and slow learners, of poor readers and good readers. Therefore, it should include individual desks for students, preferably in sound-proofed carrels, a teaching (learning manager) station with files for student records, and a library or reading room. Ideally, there will be a separate testing room and an adjacent office for individual counseling. It should be well stocked with programed instruction materials, arranged for easy accessibility, and cataloged according to skill, content, and suggested level of usage. Attention to comfort and esthetics in the selection of furniture and in decorating is also stressed by practitioners.

Teacher Training Vital

Teaching skills are vital in project outcomes. Teachers' strengths may lie in their superior knowledge of

[14] *The Individualized Manpower Training System—from Concept to Implementation.*

[15] Supported by experience in the following projects listed in app. A: Restoration of Youth (2), Inmate Training at Draper (4), TAT (6), Project Challenge (8), Secretarial Training (9), Project PEACE (10), BOLT (11), and SNAP-SMART (19).

[16] This was the finding at the project dealing with the potential of NYC-2 (project 16, app. A) and in the project conducted for workers in the paper industry (project 21, app. A). On the other hand, the program at Vanderbilt University (project 13, app. A) reported good progress by after-hours enrollees.

a vocational area. (Journeymen workers make good teachers.[17]) Success may result from the natural empathy between students and teachers with similar ethnic and socioeconomic backgrounds. Researchers have found that sincere interest in the trainees and enthusiasm for the task at hand are more important than formal training in educational methods. In fact, some of the most successful teachers (or "learning managers") in R&D projects have had no formal teaching credentials.[18]

Contractors agree that teachers should support the social philosophy of programs for the disadvantaged and be strong enough to handle discipline problems but able to create a more relaxed atmosphere than that of the traditional school setting. They further agree that, regardless of the criteria used in selecting instructors, the teaching staff must be trained for the specific task of working with disadvantaged adults. Teachers must not only understand the characteristics and problems of their students but also know how to handle the diagnostic-prescriptive-sequenced management system that underlies the learning process.

Use of Tutors

Individualized instruction implies a high ratio of staff to pupils, and R&D projects have made effective use of tutors to supplement teachers and work with students on a one-to-one basis (or nearly so).[19] A particular need for tutors has been noted in projects enrolling individuals with less than fourth-grade achievement levels. In one instance, tutors were from VISTA (Volunteers in Service to America); in another, housewives with some qualifying experience in their backgrounds; and in still another, the more advanced students working with others in the same project. The Job Corps has also experimented with tutoring, using corpsmembers as "peer" tutors and adults from communities at or near centers who have received special training. The lesson appears to be that personal attention helps to overcome motivational barriers.

However, the difficulty of recruiting and training large numbers of tutors places practical limitations on the extent to which ABE units in manpower programs can be staffed with them.[20] In addition, sponsors of some R&D projects have cautioned that, unless tutors *are* trained (in proper techniques), they are likely to inadvertently become crutches for students who then fail to master independent problem-solving techniques. In their zeal to help, some tutors have fallen into the trap of "tutoring to tests," which helps students in passing particular tests but not in acquiring skills of general applicability.

Counseling and Supportive Services Necessary

Manpower services for the disadvantaged have generally included counseling and supportive services to keep clients in programs and insure that they benefit from them. So, too, R&D projects with an ABE component have shown that many enrollees are too distracted to learn until they get help with personal problems such as budgeting or child care.[21] Or they may be held back by poor eyesight or hearing or other health problems that could respond to medical treatment.

Unmet Need for Standardized Outcomes Data

Because of the variety in teaching materials, techniques, and other aspects of R&D projects, and because standard measures of outcomes have not been employed, it has been impossible to compare results in different projects or state the likely gains to a given clientele from a given set of procedures. The advantages of obtaining such information for manpower planning purposes are fairly obvious. Not only would it furnish guidance to manpower program practitioners, but it would have implications for employers' hiring decisions. Patently, an

[17] See the project listings in app. A for Restoration of Youth (2) and TAT (6).

[18] As in the following projects listed in app. A (in addition to those in which journeymen workers served as teachers): Inmate Training at Draper (4), Project Challenge (8), NEP (25), BOLT (11), and EMLC (15).

[19] See listings for the following projects in app. A: Restoration of Youth (2), Inmate Training at Draper (4), Project Challenge (8), Project PEACE (10), and EMLC (15).

[20] The National Reading Center reports significant success in recruiting and training volunteer tutors in target communities throughout the country, working in cooperation with the National Center for Voluntary Action. See *Project Literacy: The NRC Nationet Model* (Washington: The National Center for Voluntary Action, 1974).

[21] Counseling and/or supportive services were included in varying degrees in a majority of the demonstration projects listed in app. A.

employer will be more likely to hire workers who can achieve a required level of academic proficiency in 3 months of special education than in 6 months and more disposed to hire those who do badly on academic tests if it is established that a given investment of effort will produce predictable results.

Thus there is need for evaluating ABE efforts, using standardized approaches to identify one or more training methodologies that work and to quantify outcomes. However, in the present state of the art, it can be estimated with some assurance (on the basis of experience in four projects[22]) that persons with approximately seventh-grade achievement in reading and math can be prepared for the GED examination in about 200 hours (or less for some) of remedial academic instruction.

It is also fairly evident that the amount of time required to advance one grade level is less for students who begin at higher levels of achievement than for those who are farther from proficiency. Moreover, gaining one grade level takes longer in reading than in math.[23]

English as a Second Language

In a specialized area of remedial education, an R&D contractor has developed a program to teach English language skills to the Spanish-speaking (and Spanish language skills to the English-speaking) with positive job market outcomes for unemployed and underemployed Spanish-speaking enrollees. A key element in the methodology is the use of a specific job vocabulary, consisting of words and phrases commonly encountered at the jobsite. A team of teachers possessing a high degree of empathy with the students uses sophisticated electronic audiovisual and audiolingual teaching aids.[24]

Another contractor has also worked extensively with Puerto Rican youth who could neither read nor speak English.[25] In a language workshop for non-English-speaking youth, it was found that the audiolingual method, stressing the mastery of listening to and speaking English in advance of attempts to teach its reading and writing, gave good results. In an interesting experiment, tokens and money were used to reinforce learning to speak, read, and write English. Empirical support was found in two of three experiments (using control groups) for the hypothesis that monetary incentives significantly enhance acquisition of skills.

In the period since Department of Labor funding ended, the College Adapter Program (CAP, described later in some detail) has increasingly enrolled Hispanic Americans. It can now properly be described as a bilingual program, including Spanish-language courses in math and language arts and preparation for passing the Spanish GED, as well as a curriculum in English as a second language.

The latter serves primarily newcomers to the continental United States with little command of either written or spoken English, while the English for the Bi-Lingual Speaker (EB) Program serves those who have grown up in the United States using Spanish in their homes and English in their schools. This group has the highest dropout rate of any ethnic/racial group in the New York City schools; its members appear to suffer from a kind of interference with learning stemming from an admixture of the two languages. Thus, the EB Program includes teaching in both languages in an effort to correct serious handicaps in each.

CAP has developed a number of special tests to determine the language backgrounds of its students, which are useful in placing new enrollees at the appropriate level of instruction. Another original contribution is a manual for GED instruction geared to the tests administered in both New York State and in Puerto Rico.

Job Corps offers English-as-a-second-language instruction in bilingual, multicultural centers accommodating Spanish-speaking young people. The aim is to help them become fully literate in two languages, and literacy instruction is given in both of them.

Another effort involved teaching business speech as a second language to students retaining the everyday patois for use at home. The R&D contractor experimenting with this technique conducted a project in Louisiana to prepare unemployed women—mostly black and mostly high school graduates—for well-paying secretarial jobs.[26]

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[22] App. A: Inmate Training at Draper (4), TAT (6), EMLC (15), and IMTS (24). These projects have in common the use of programed instruction materials, a learning center, and an individualized instructional system.

[23] See, for example, the section on Amount of Instruction to Advance One Grade Level in app. D.

[24] Project BOLT (11), app. A.

[25] Fulfilling the Potential of NYC-2 (16), app. A.

[26] Secretarial Training (9), app. A.

Strong Management System Essential

One consensus that has emerged from R&D projects featuring basic education is that what matters most is not the particular techniques and materials employed but the way in which those chosen are used. (PI administered in strong, 6-hours-at-a-stretch doses can be lethal rather than curative.) One recurring expression of this viewpoint is the admonition to train staff. This is considered more important than the materials developed.

The most significant contribution of the Department of Labor's R&D efforts in basic education may turn out to be the development of a management system which begins with diagnosis, proceeds with prescription, is strong on evaluation and feedback, and is packaged for use after relatively short-term staff training. Progress in this direction is reflected in the next section, which describes some of the more significant R&D projects.

Projects of Special Significance

All of the R&D undertakings which have dealt with adult basic education are capsulized in appendix A. Some, however, merit more detailed description because they have produced especially significant results with a good potential for application in regular manpower programs.

The Experimental Manpower Laboratory for Corrections (EMLC)

The Rehabilitation Research Foundation, which operates the laboratory, recently moved its base of operations from the Draper Correctional Center at Elmore, Ala., to the Alabama Industrial School at Mt. Meigs, near Montgomery, Ala. During 1964-68, the foundation conducted experiments in the feasibility of operating MDTA skill training projects for inmates at Draper. Among the critical questions explored was how to improve the academic performance of the inmates so that they could profit from skill training and be prepared for good postprison jobs—an outcome that would give them the best possible chance to lead to productive lives free of further criminal activity.

During this period, experimental work in developing a system of individualized instruction in reading, math, and language arts was conducted. A learning resource center was set up, suitable programed instruction materials were identified, college students were used as tutors (and role models), and principles of "contingency management" were applied.

Additional, and more sophisticated, work with offenders in these areas has since been carried forward in the several phases of the EMLC. Several tools have been developed by the Rehabilitation Research Foundation for use in adult basic education for the disadvantaged. The first of these, the *Individually Prescribed Instructional System (IPI),* is a program for teaching language arts (the mechanics of writing and speech such as grammar, spelling, and punctuation) and basic math. The IPI System was the earliest effort under R&D auspices to develop a technology for an individualized instruction system which covered management of the delivery of the instruction and which could be presented in manual form for general use. It used—and uses—the Tests of Adult Basic Education (TABE) as the basic diagnostic instrument.[27]

Subsequently, an effort to link scores on the TABE to specific modules of programed materials in a proper sequence for correcting learning deficiencies resulted in the development of the *Modular Analysis of Learning Difficulties* (MALD). This tool specifies learning deficiencies and guides the prescription of PI materials from a *Prescribing Catalog,* which lists only commercially available materials. (In some areas alternate choices among publishers are possible.)

These several tools are currently employed by educational supervisors in the correctional systems in South Carolina, Georgia, Pennsylvania, and Kentucky and in several additional Federal, State, and local correctional institutions, as well as in a State adult basic education program.

The foundation has given considerable attention to

[27] Despite the shortcomings of this and other available tests already noted, TABE is also used by the Technical Education Research Centers and in the Training and Technology project because it has an easily administered "locator" test which separates students into three gross levels of readiness for materials of easy, medium, and greater difficulty; in math and language it is capable of further refinement by levels of difficulty; it is relatively easy to score and this can be done locally, while other tests may require forwarding to a headquarters for scoring.

motivating disadvantaged adults for academic achievement. For many students, the reinforcing elements of the IPI System are sufficient; individualized study schedules, the immediate verification of responses provided by PI, the experience of success, and praise from managers—all combine to keep these students performing at or near their best potential.

With other students, techniques of contingency management[28] can be used to stimulate and maintain the flow of academic achievement. Rewarding academic progress with reinforcers such as time off, money, coffee breaks, or points exchangeable for desired items has been demonstrated to be effective in motivating learning. Successful reward systems can be operated within even those ABE programs which lack funds to cover cash awards, prizes, or consumables, since time off, passes, special privileges, and similar rewards require only policy decision and administrative cooperation.

Foundation staff report that contingency management is best handled through individually negotiated and written contingency contracts, which state agreements between the manager and student concerning the amount of academic progress expected and the reinforcers guaranteed to the student. They have found that contingency management techniques can be learned and systematically applied by any learning manager who has the characteristics and the commitment suited to teaching disadvantaged students.

A cautionary note is in order, however. Contingency management techniques should be thoroughly understood before they are employed. They can best be learned from trained psychologists.

The foundation researchers have found that remediation in reading poses particular difficulties. In the absence of good instruments for diagnosing weaknesses, it has been impossible to relate those weaknesses to specific modules of instruction as the MALD does in other areas. However, an *Individualized Reading Instructional System* (IRIS) has been devised. Available since August 1973, IRIS is an organized procedure for teaching reading to students who have varying degrees of reading proficiency,[29] by providing a graduated system of six self-paced tracks suitable for persons ranging from the 0.0 to the 7.0 grade level and above. Students are placed in a track according to scores on the Locator Test for the TABE. Each track is composed of short sequential modules of instructional material chosen from a wide selection of published reading and reading-enrichment programs. Module tests provide for continuous evaluation, both diagnostic and prescriptive. Overall pretests and posttests are also used to determine progress in standard terms of grade level advancement.

Additional key features of the IRIS include the use of a reading lab accommodating from 1 to 15 students at any one time; open-ended instruction (permitting entry and exit at any time); the use of only two machines, a cassette player and a card player; and largely reusable instructional materials. The IRIS Guide outlines for the instructor step-by-step procedures for monitoring students' progress and provides a purchasing guide for materials and equipment.

The Individualized Manpower Training System (IMTS)

Starting in 1971 with the concepts and tools developed in the Draper project and by the EMLC, but expanding their application to significant additional areas of instruction, the Technical Education Research Centers (TERC's) have formulated a program to train staff in how to set up and run an individualized instructional system. To remedial adult basic education in reading, arithmetic, and language, the IMTS adds components of occupational exploration (including work sampling, shop tours, and other opportunities for receiving vocational information and guidance); complementary skills (including consumer education and instruction in health maintenance and personal-social skills); employability training (in what constitutes acceptable on-the-job behaviors with respect to attendance, punctuality, care of property and resources, and standards of performance); and some preparation for vocational training, such as an opportunity to handle and become familiar with basic tools.

Both the TERC's and the EMLC encountered serious difficulties in upgrading the reading skills of individuals with less than fifth-grade achievement. Efforts to develop better diagnostic tools for them, in cooperation with commercial firms producing materials, and reliance on a broader range of multimedia aids (helpful in maintaining interest) also distinguish the IMTS from the EMLC program. Moreover, the TERC's have formulated

[28] Contingency management is defined by the foundation as "the systematic arrangement of reinforcing consequences of behavior, the objective of which, when applied to educational settings, is to achieve increased student performance. A contingency manager attempts to produce better student performance by establishing clear and dependable relationships between educational behavior (e.g., rate of learning and accuracy in responding) and the immediate results of that behavior."

[29] Reading is conceded to be the critical academic skill upon which the acquisition of others depends. A number of researchers have found it is more difficult to teach than mathematics.

a reading management training procedure, involving two commercial, multimedia programs. Staff are taught how to use the two programs (one focused on word attack skills) in concert.

In addition, the TERC's have added to and updated the options offered in the *Prescribing Catalog* developed by the EMLC and have made modifications in the MALD intended to present more appropriate learning sequences for both language and arithmetic.

The TERC's are unique among R&D contractors who have worked with adult basic education in producing comprehensive staff training packages aimed at improved understanding of, and competence in the use of, the technology developed. With the IMTS, the TERC's are answering the need for specific, practical information on initiating and managing an individualized adult basic education program at 10 pilot-demonstration sites in Alabama, Florida, Georgia, and California. Among the host institutions are area vocational, technical, and trade schools, a skills center, a community college, and youth detention centers.[30]

In Florida, this program has been part of a move by the State Department of Vocational, Technical and Adult Education to coordinate the use of Federal monies under different authorizations (manpower legislation, the Adult Basic Education Act, the Vocational Education Act) for the benefit of the disadvantaged. A Consortium of Colleges and Universities (CCU) has been enlisted in the effort and has helped to monitor and advise the TERC's project. CCU has assumed responsibility for training staff and monitoring performance as the use of the IMTS expands in the State.

The TERC's concentrate on training *available* staff, in the acquisition and use of *available* materials.[31] Training packages have been developed to guide a sequence of staff training beginning with a 1-day orientation workshop and continuing through five other phases. (See appendix C for a list of available training materials.) In the course of this training, staff preparing to manage the learning of disadvantaged individuals through the IMTS get practical, commonsense instruction in how to set up a facility, order materials, diagnose and prescribe for enrollees' learning needs, and manage the instructional program.

The creators of the training packages readily acknowledge that no staff training program can guarantee the critical qualities of genuine interest in the task and the clients and skill in the use of the materials. They have, however, taken specific steps in producing their materials to attempt to compensate for learning manager idiosyncracies and for problems caused by staff turnover.

Both the student instructional system and the staff training offered by the TERC's are firmly based on the concept of individualized goals, motivation, and learning. Considerable attention is given to awakening awareness of individual strengths and values, so that each enrollee can be helped to select achievable goals consistent with his or her interests, abilities, and motivating values. Staff are thoroughly grounded in the importance of recognizing and responding to all manner of individual differences within a group which nevertheless shares certain behavior patterns (including an aversion to conventional programs and to peer pressures) that require alteration as precondition of success in the world of work. The accent is consistently positive, with reinforcement of success systematically managed through the constant evaluation and feedback of each trainee's progress which is built into the system. The perceptiveness of individual learning managers must, of course, also be relied upon for reinforcement.

Perhaps because this is the only offering of its kind, as well as because the concept of individualized instruction for the educationally disadvantaged has gained general acceptance, the response to the TERC's project has been lively. As field testing and refinement of the materials have progressed, requests for information and demonstrations have multiplied. It appears that the long-range goal of the project—to increase the number of qualified staff who can establish and operate an individualized system of prevocational and vocational training for adults in need of remedial education—is on its way to realization. In addition to the installation of IMTS beyond the demonstration sites which have been noted, the University of West Florida in Pensacola has begun giving undergraduate credit for participation in the staff training program. This represents a step toward the kind of institutionalization which must occur if the system is to operate on a large scale.

The New Education Program (NEP)

This project, operated by Graham Associates, Inc., in four NYC-2 projects, was concerned with developing an

[30] In addition, the system is either in use or in process of implementation, outside the aegis of the Department of Labor contract, in seven other institutions in Florida (two on an Indian reservation), in four community colleges in Massachusetts, in three area technical schools in Oklahoma, and in six centers run by the California Youth Authority.

[31] The only original material in the TERC's packages for trainees is that for orientation to jobholding and the employability components. The staff has also developed a vocational program in a single occupational cluster, but it has not been field tested.

NYC-2 in-house education program.[32] Using Job Corps programed learning materials as the core curriculum, the project was prompted by recognition that the public schools had failed to provide appropriate education services for NYC enrollees, while NYC projects had obtained unimpressive results with their own programs.

A study of the effectiveness of the NEP project[33] found that the results reflected significantly greater academic improvement than that obtained by the education efforts of NYC projects reviewed earlier. Retests of NEP students showed average grade gains of 1.01 in reading and 1.53 in math at the end of 6 months,[34] supporting Graham Associates' claim that the Job Corps curriculum can furnish a strong foundation for an NYC education program. However, the roughly 50 percent of the enrollees who stayed in the program less than 3 months benefited very little.

Variation in improvement from one site to another suggested to the researchers that student/teacher effectiveness was greater at one than at another, and this viewpoint was confirmed by independent observations of administration and procedures. Indeed, in selecting the sites for the demonstration, the researchers found that some NYC projects had to be ruled out because of reluctance to try new approaches, others because of generally poor administration, still others because of transportation problems making it too difficult to assemble the students in a central location. Such considerations are reminders of the complexities of structuring a basic education project, quite apart from the quality of the materials and instruction employed.

Based on the project experience, the researchers suggested a need for an open-ended enrollment policy and for sophisticated diagnostic and placement tests related to teaching materials. The system should set short-term, individual goals and provide for frequent success reinforcement. The teacher, whose role is vital even with programed material, should act as "facilitator," working individually with students rather than lecturing to the group. The researchers further stress the importance of arranging in advance for enrollees to receive public school credit for participating in the NYC education program. Nevertheless, credentialed teachers may not be required—may not, in fact, make the best teachers—if there is one master teacher in an overseeing role. Qualities like sincere interest in students, energy, willingness to vary procedures and materials, promptness, and neatness were seen as more important than the ethnic background, sex, or physical appearance of teachers.

These researchers rate the teacher as more important than the curriculum in the all-important objective of motivating enrollees to stay in the program and to learn.

Graham Associates, Inc., has recently been awarded a grant to determine if the NEP can be usable in a wide variety of vocational training settings and is therefore well suited to the manpower revenue sharing era. It is being tested in a skills center, in a camp for delinquent youth (aged 16 to 22), in a youth lock-up facility for more difficult cases, in a "precontinuation" school program for ninth graders, and in two NYC-2 projects. These several settings will provide considerable variation not only in the characteristics of enrollees but also in the circumstances affecting motivation (e.g., the compulsory enrollment of the youth at the correctional institutions versus the lack of compulsion, in fact, the payment of allowances, in the manpower programs; attendance at the precontinuation school is mandatory, but truancy is a chronic problem). The aim is to develop a how-to manual for use by a variety of local agencies that may be administering manpower programs in the manpower revenue sharing era. The project is scheduled to conclude in January 1975.

The George Washington University, Manpower Research Projects, has been chosen to do the companion evaluation study, using such measurement criteria as percent of time in attendance, academic change, attitude change, and staff observations and ratings.

College Adapter Program (CAP)

In an effort to expand the limited training options of the disadvantaged beyond manual skills to technical training at the college level, this program has guided more than 1,000 students who were unprepared for college to successful study in the community colleges of the City University of New York. Proposed and sponsored by the university, the experiment began in 1969 and has had both Department of Labor and city funding.

CAP researchers see a linkage between strong educational services and manpower objectives as a critical, and too often neglected, factor in program success. A major contribution of the project has been to show managers

[32] NYC-2, a restructuring of the original out-of-school program, stresses education as the first priority of services to be given.

[33] *A Study of the Effectiveness of the Graham Associates' Demonstration Project on NYC-2 Educational Programming, Final Report* (Washington: The George Washington University, Manpower Research Projects, August 1973).

[34] Based on retests using alternate forms of the Stanford Achievement Test.

of manpower programs who refer clients to CAP the feasibility of guiding disadvantaged students into technical areas not ordinarily associated with college enrollment. Courses in such subjects as ophthalmic dispensing, automotive technology, machine tool technology, nursing, medical laboratory technology, and computer technology are available in New York City community colleges (and in many other community colleges) and offer a high probability of job placement at better than entry levels upon completion. However, the disadvantaged require special preparation to qualify for and successfully complete the courses.

CAP takes high school dropouts or graduates with at least an eighth-grade achievement level who have been insufficiently prepared for further education and, in an average of 6 months, prepares them to start preseconday technical courses. Most of the dropouts acquire GED certificates in this period, although this is not a specific requirement. The program has grown and now operates two schools serving manpower program enrollees, including those in the NYC out-of-school program. It may be of special interest to community colleges which have adopted open admission policies and are therefore enrolling students who need special help to succeed in college.

An interesting recent development is the increasing number of ex-addicts and ex-offenders accommodated by CAP and the structuring of a new intake procedure for these men and women. The program is now significantly involved in the rehabilitation planning of both the City Department of Corrections and the Addiction Services Agency.

CAP asserts that the success or failure of an educational project depends largely on the orientation provided the enrollees. In this program, orientation consists of a 10-day, 30-hour period devoted to counseling, diagnostic testing, language arts and mathematics review, instruction in study skills, and familiarization with the tutoring center. It is used by the staff to assess the student's specific skills and his or her potential benefit from the project and by the student to decide on the project's suitability for him. Initial career guidance is given, and student-teacher-counselor relationships are established. Students absorb the objectives of the program through counseling, class instruction, and printed materials in which these objectives are clearly outlined.

At the beginning of each course, the students receive a syllabus with a carefully constructed sequence of topics. They are not arranged in the usual easy-to-difficult progression, but the easy is alternated with the difficult to minimize the frustration of coping with the latter. Moreover, teacher-selected topics alternate with those chosen by students.

Courses progress from activities that allow students to be dependent upon the teacher to ones that demand increasing self-reliance and self-direction. Skill objectives for a course are specific and are carefully defined for the students in terms of behavior that can be brought about in the classroom or tutoring center through models, exercises, and practices. Courses use textbooks, in easily readable format, supplemented by teacher-prepared materials, programed materials, skill development kits, reference works, and films. Some form of "homework"—independent study in the tutoring center—is always included.

CAP uses both diagnostic and regularly administered progress testing, the former to plan each student's course of study, the latter to give him an accurate idea of his skill development and the skills remaining to be mastered. Short daily quizzes have been found to be particularly effective in math and science. Students are deliberately exposed to diverse testing procedures to help prepare them for the job selection and assessment experiences they will encounter in the future.

A detailed account of CAP's concepts, experiences, and procedures has been funded by the Manpower Administration for the benefit of manpower program administrators concerned with academic education.[35] The description just presented contains some of the highlights from the publication. Space considerations preclude even the highlighting of all phases of the program, but CAP advice on teaching the critical skill of reading is worth reporting.

Administration of a general diagnostic test is recommended as a first step, as is the subsequent use of other diagnostic tests relating to teaching materials selected for the tutoring center. Since reading is a complex skill, the subject should be divided into individual components and presented in progressive order of difficulty. For example, detecting generalizations and details should precede learning to make inferences. Various materials should be presented, including essays, newspapers, magazines, and poems in addition to textbooks.

Using materials that inform students while providing practice in individual skills is a good way to motivate them to further practice. (One frequent criticism of commercial reading materials is that the content is too

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[35] *Manpower Education Monograph Series* (vols. I-IV, New York: Higher Education Development Fund, July 31, 1972).

juvenile for adults or too unrelated to the everyday experiences of some groups.)

Other practical suggestions are:

–Require students to identify the different types of questions that are asked in reading comprehension exercises. If a student arrives at the right answer through a process he understands (such as identifying generalizations), he will at the same time improve this ability to organize–and this, in turn, will carry over to his writing skills.

–Stress reading comprehension, but help students adjust reading speed to content. Some read too slowly, others too fast.

–After a student has learned basic skills, a useful reinforcement technique is to ask him to create his own reading exercises.

–Stress contextual vocabulary, that is, determining the meaning of words in context, a practical, everyday skill.

OTHER DEPARTMENT OF LABOR SUPPORT FOR BASIC EDUCATION

In Regular Programs

A study completed in 1972 provides the most comprehensive information about the extent and nature of basic education in categorical manpower programs.[36] Nine were surveyed: MDTA institutional training, MDTA OJT, JOBS, WIN, CEP, NYC in-school and summer, NYC out-of-school, Operation Mainstream, and New Careers (which became part of the Public Service Careers Program in fiscal 1970).

At the time of the survey, the median number of trainees in basic education units in these nine programs was just over 100; the range was from 74 in the NYC in-school program to 340 in CEP.[37] Thus, the number of trainees served in any one year did not appear to be large, although the cumulative total over several years would be impressive. The cost of providing the services in fiscal 1970 was conservatively estimated at $94 million, and the contractors thought it probably amounted to just over $100 million.[38] Additional information from this study of the prevalence and nature of adult basic education in the nine programs is given in appendix D.

Although the Job Corps has provided basic education and preparation for the GED since its inception, it was not included in the survey because of the unavailability of comparable information. Since, however, almost all Job Corps members are school dropouts, nearly all of the 20,000 young men and women enrolled at the time of the survey were receiving academic instruction.

The Job Corps has consistently been in the forefront among manpower programs in efforts to overcome educational deficiencies among its clients. Administrators of the several kinds of centers generally regard educational activities as a key component in the comprehensive services offered. In addition, the Job Corps has done much developmental work in bringing about the programed learning system described in appendix E.

High School Equivalency Program

Another education program under the aegis of the Department of Labor has been the High School Equivalency Program (HEP) for migrant and seasonal farmworkers. Developed by the Office of Economic Opportunity under the Economic Opportunity Act and first funded in 1966, it was transferred to the Department of Labor (as part of a comprehensive program for these workers and their families) in August 1973. It is designed to provide youth between the ages of 17 and 24 who have dropped out of school with the skills needed to pass the GED and obtain a high school diploma. Beyond that, the objective is to place the enrollees in jobs with opportunity for upward mobility or in vocational training or college.

HEP is a full-time, coeducational program run on college campuses (about 15 in number) around the country. HEP students live in college dormitories, participate in campus activities, and may be tutored and counseled by regular students. Their involvement in college—to them, a new way of life—helps them to grow socially as well as academically. The program stresses small classes, individualized instruction, programed materials, a system of awarding points translatable into

[36] Gene B. Peterson and Thomas F. Drury, *Basic Education Services in Manpower Training Programs* (Washington: Bureau of Social Science Research, Inc., September 1972).

[37] Data were not shown separately for MDTA OJT and New Careers due to the small number of units reporting.

[38] The uncertainty relates to data for the JOBS Program, which accounted for at least 40 percent of the total.

rewards for correct behavior, and the use of audiovisual teaching aids. Vocational counseling is added to the academic instruction. Length of stay in the program averages 4.5 months. In 1973, 1,893 youth were enrolled; they included about 64 percent Hispanic Americans, mainly Chicanos and Puerto Ricans, and 16 percent blacks, as well as other racial and ethnic minorities.

The Employment Service Basic Occupational Literacy Test

The Federal-State public employment service (ES) has been the principal recruiting, referral, and placement agency for manpower program clients in the past and will undoubtedly continue in this role for many prime sponsors in the new program era. In order to serve disadvantaged persons, the ES has found it necessary to develop special tests for individuals of low academic achievement.

The Non-Reading Aptitude Test Battery was one such tool. More recently, the ES has devised the Basic Occupational Literacy Test, an achievement test geared to the interests and experience of disadvantaged adults and designed to eliminate racial and cultural bias. By measuring achievement in the four areas of reading vocabulary, reading comprehension, arithmetic computation, and arithmetic reasoning and expressing the results in terms of specific occupational requirements rather than school grade levels, the test can indicate the kinds of jobs disadvantaged adults are capable of performing. The result should be to open up more jobs for them. It can also be used to indicate the kinds of skill training for which they are prepared and what literacy training they may need.

The Basic Occupational Literacy Test has been designed (and tested with disadvantaged and minority groups in all regions of the country) to measure skills ranging from bare literacy to a high school dropout level. It is available in four levels of difficulty, and the appropriate level to administer is determined by a short (15-minute) screening test called the Wide Range Scale. The new test is presently being introduced throughout the ES system.

RESEARCH IN BASIC EDUCATION BY THE OFFICE OF EDUCATION

The Adult Basic Education (ABE) Program administered by the Office of Education in the Department of Health, Education, and Welfare enrolled approximately 800,000 adults (16 years of age and over) who lacked high school diplomas in fiscal 1974. At a Federal cost of $61 million, the program provides instruction in reading, writing, computation skills, and social living skills, as well as preparation for vocational training. Grants are made to State and local education agencies and to public and private nonprofit organizations to conduct the classes. Manpower program sponsors have sometimes called on these resources to obtain ABE for their clients.

This large-scale endeavor began in 1967 under the authority of the Adult Basic Education Act of 1966. While it is federally funded, it cannot be termed a national program in the sense that the term implies the use of uniform standards and practices. Nor are data on outcomes collected and summarized nationally. A study contracted by the Office of Education and completed late in 1972 attests to the vast distance still to be traversed in order to arrive at models of ABE suitable for the varied groups in need of literacy training.[39] While the study was an effort to paint a comprehensive picture only of the effort to upgrade the quality of instruction in ABE classes in the United States, the findings plainly reveal the lack of consensus about the objectives, methods, and circumstances appropriate to ABE.

There is, however, general agreement on the need for refined diagnostic tests of reading ability which are "criterion referenced" rather than "norm referenced," that is, tests that yield indications of how well an individual performs relative to some criterion or specific learning objective rather than how well he performs relative to others similar to him. In this important area, there are many embryonic efforts by test publishers and school systems aimed at radical revision of achievement tests with the aim of incorporating new concepts looking toward criterion-referenced products.

In a related effort, under a contract with the Bureau of Adult, Vocational, and Technical Education of the Office of Education, researchers are attempting to describe adult "functional" literacy in pragmatic behavioral terms and to develop devices for assessing literacy that will be widely useful. In pursuing these objectives, the Adult Performance Level (APL) Project staff has (since the fall of 1971) been analyzing the components of adult literacy, reaching three "crucial conclusions:"[40]

1. "Literacy" is a construct which is meaningful only in a specific cultural context. . . . Furthermore, as technology changes, the requirements for literacy change.

2. "Literacy" does not consist of just a single skill, or even two skills. . . . [It] is best defined as the application of a set of skills (dimension 1) to a set of general knowledge areas (dimension 2). [The skills identified are reading, writing, speaking, listening, problem solving, computation, and interpersonal relations, while the knowledge areas of concern in the vocational context are consumer economics, occupational knowledge, government and law, community resources, and health.]

3. "Literacy" is a construct which is directly related (in a mathematical sense) to success in adult life . . . technically [this is] not a conclusion . . . but . . . the basic operating assumption underlying all APL research activities. . . . The assumption implies that not only must the measure be derived from performances which are taken from the adult milieu (rather than from an elementary or secondary school frame of reference), but that performance on such a measure must be positively correlated to success.

(The APL staff has constructed an index of "success" which includes four composites.)

[39] *Adult Basic Education Study* (Kansas City, Mo.: University of Missouri, 1972). Part I is a compilation of 278 abstracts of documents related to teacher training in ABE, followed by an unannotated bibliography of an additional 134 documents which are also of significance to the field.

[40] Nowell Northcutt, *Functional Literacy for Adults, A Status Report of the Adult Performance Level Study* (Austin: The University of Texas, Spring 1974).

The researchers have developed a system of adult literacy objectives and accompanying test items which are keyed to four literacy skills and to the five general knowledge areas. A national survey of the areas of occupational knowledge and consumer economics has been completed, using a national probability sample based on a selection of counties. Individuals tested represented a universe of population 18 through 65 years of age, living in households, who are physically able to read and write.

Survey results emphasize the vast need for ABE. For example, an estimated 26 to 28 million adults are unable to address an envelope well enough to insure proper delivery. Almost one-fifth of the sample, which can be translated to an estimated 22½ million adults, are unable to read and interpret a tabular payment schedule well enough to determine the monthly payment for a given amount of indebtedness. A second national survey is planned to study performance on tasks keyed to the other three knowledge areas.

As the researchers state, "The way in which literacy is conceptualized has profound implications for the kinds of programs and processes that are created to reduce or eliminate illiteracy." When the second phase of field work is completed, the researchers think that the set of objectives, test items, and national estimates of adult objectives should be a valuable resource for planning, developing, or evaluating educational programs.

RESEARCH NEEDS AND ISSUES

Just as in many other areas of experimentation and demonstration in human behavior, the "findings" regarding adult basic education in a manpower context are based largely on observation supported by very limited hard data, rather than on fully documented research. Conceding this, one can still assert that basic education can be combined with and related to skill training, thereby mutually reinforcing motivation to learn in both areas; that individualization is the key to effective programs; and that programed instruction, tutoring, and the use of varied materials including games are all helpful. And the staff must be trained if good results are to be obtained.

Need for Controlled Research

Controlled experiments identifying the techniques, materials, and time periods required to produce specified results with a given clientele have so far been beyond the capabilities—or perhaps beyond the intent—of the researchers. The problems of such evaluative research are many, including the multiplicity of such variables as characteristics of trainees (especially the beginning level of competence), training sites, teacher competence, materials used, overall project management, money expended per student, and so on through a long list. There are also the commonplace evaluation problems of arriving at standard measurement criteria to be employed in varying circumstances, of obtaining control groups, and of following up on enrollees.[41] The prospect for eventual progress in this regard may reside in the potential testing areas where the IRIS and the IMTS have been installed on a fairly wide basis, that is, in State correctional institutions on the one hand and sites outside the prison environment on the other. The Technical Education Research Centers have itemized the kinds of data to be collected and prepared forms for recording the data. But while this system has commended itself to users on the basis of subjective impressions of real accomplishment, including relatively few dropouts, accountability in terms of comprehensive measurements and controlled variables is still to be established.

There is clearly a need for evaluative research effort all along the line, with standardization of procedures, techniques, and materials and the detailed recordkeeping which will produce data for analysis. However, such activities are known to be time consuming and expensive. For example, observation of the experience at several IMTS sites suggests that it is not feasible to rely on busy program operators to compile and forward the data. A staff specialist appears to be needed. There is also a delicate question of timing and balance in determining at what point in a developing field of knowledge emphasis is more usefully placed on standardization and recordkeeping than on innovation and experimentation.

New Directions

As indicated earlier, a consensus exists on the need for refined, criterion-referenced diagnostic tests, especially of reading ability, and educators are moving toward defining functional literacy as reading ability which

[41] The Center for Adult Education, Teachers College, Columbia University, has prepared an *Evaluation Guide for Adult Basic Education Programs* as part of a larger study of a sample of programs across the country. The approach to evaluation is one of "determining the degree and nature of the fit between *intent* and *current practice*" in six areas identified as crucial—staffing, instruction, recruitment, collaboration, in-service education, and goal formulation. Interview instruments are furnished for use with administrators, teachers, and students.

enables people to cope with everyday experiences. Moreover, efforts are being directed toward the development of tests which compensate for such sources of poor performance as lack of motivation to do well, insufficient time to complete items, unclear directions, and uncomfortable testing conditions. The need for additional progress in the area of testing is well established.

The whole area of "individualization" and its relation to motivation and the use of contingency management is another in which there is much activity and experimentation in addition to the relatively modest efforts funded by the Manpower Administration. Here, too, there is need for additional work but with an implied caution against proceeding too far and too fast with elaborate evaluation—or even with additional demonstration efforts on how to individualize instruction. While the theory of contingency management is generally accepted, specific techniques have not been validated to the point where they can be readily taught. The danger is that inexperienced or unwise practitioners may misuse them.

R&D Priorities in Basic Education

One possible focus of additional R&D efforts is that of determining the relative costs of various delivery systems. Data are available to show that costs have varied greatly among programs, e.g., from a median of $100 per trainee in the NYC out-of-school program to about $450 per trainee in the JOBS Program, according to the study by the Bureau of Social Science Research (see appendix D). However, basic education programs have varied greatly from project to project within a single manpower program, and much more refined data are needed to determine the actual cost of delivering services.

Similarly, to the limited extent that cost data are available in R&D studies, they also show considerable variation. The study of five remedial education programs in the southern paper industry revealed a range from $100 to $1,637 per completer, paralleling the varying elaborateness of the programs. CAP estimates a per trainee cost of $1,200. The TERC's package includes an *Analytical Inventory Guide*, which itemizes elements needed for each component of IMTS and their costs. Installation costs have varied from a few thousand dollars to nearly $100,000, depending on how much of the needed equipment was already on hand and on how many of the program components were provided. Again, the available data are not sufficiently refined or standardized to shed much light on the actual cost of delivering services. Of course, costs must also be related to the effectiveness of programs. An expensive program producing good results may be far more cost effective than a less expensive one with poor results.

Another problem on which research efforts might well be focused is that of relating the personal characteristics of students to appropriate delivery systems,[42] beginning at the very elementary level of establishing criteria for denying admittance to basic education classes. Little success has been achieved in R&D projects with persons starting at the zero to fourth-grade level of achievement or with mentally retarded or otherwise seriously handicapped individuals. Perhaps their participation should be limited either to programs with staff resources able to serve them on a one-to-one or a one-to-two basis or to programs developed especially for them.

A personal characteristic which has not yet been defined and measured is individual learning rate. Researchers consider that achieving such a measure is essential to reliable evaluation of teaching materials and methodology.

Even if the success of one or more models for adult basic education in manpower programs can be demonstrated with statistical reliability, there will still be a need for further effort in two important areas—disseminating the findings among the widely scattered staffs who are endeavoring to overcome academic deficiencies among manpower clients and recruiting and training staff to maintain competency in the field.

[42] The CAP generally limits enrollments to persons with seventh-grade or better achievement in reading and math, while the TAT program is designed for those at the sixth-grade or higher level. However, some exceptions have been made in TAT, and under the program's regime of individualized instruction, most trainees have successfully completed the training, with scores on standardized tests rising above the sixth-grade level. However, many who score at the sixth grade and above on achievement tests nevertheless need help in such areas as how to study. When prevocational courses have been organized to prepare disadvantaged persons for the TAT training, a special effort has been made to enroll low achievers.

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APPENDIXES

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
1. Norfolk Demonstration Manpower Project[1] Norfolk, Va.	Norfolk Division, Virginia State College.	Unemployed, unskilled adults; heads of families; blacks; many with low educational achievement; in labor force for at least 3 years; wide age range.	An early project which recognized need for remedial education, counseling, occupational information, and social skills training as well as vocational training to prepare experimental group members for stable employment. Tested hypothesis that certain standardized tests have predictive value in selecting trainees and utility in developing training materials. Achievement test scores averaged about 2½ years below average 10.4 school grades completed. Specialists on college staff provided ABE. Good gains reported.	November 1962-May 1965.
2. Restoration of Youth Through Training New York, N.Y.	Social Restoration Research Center.	Male offenders, 18 to 21 years of age, all high school dropouts.	Basic literacy training one component in a package of services designed to overcome feelings of failure and poor motivation and prepare trainees for technical jobs. Tried to sustain motivation by building gradually from short-term goals to long-range objectives.	November 1963-December 1966.

Footnotes at end of table.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
3. YMCA Youth and Work Project New York, N.Y. (Bedford-Stuyvesant)	YMCA Vocational Service Center of the YMCA of Greater New York with Basic Systems, Inc.	Out-of-school, unemployed youth, ages 17 and 18	To prepare school dropouts for employment through vocational training, work experience, counseling, and remedial education. An early effort at individualized instruction which identified problems in curriculum development, inadequacy of diagnostic tests, and management of self-paced instruction, as well as the importance of instructors and the special difficulties in reading instruction. Developed some programed materials and integrated remedial and vocational education. Sixteen-week training cycle proved too short for effective ABE.	February 1964-May 1966. (Labor Department contract added to ongoing project made innovations in ABE possible.)
4. Inmate Training at Draper Correctional Center Elmore, Ala.	Rehabilitation Research Foundation.	Male offenders, 16 to 26 years of age.	Basic education and intensive counseling accompanied vocational training to prepare trainees for jobs and discourage recidivism. Used prevocational training, intensive testing, programed instructional materials, and a learning center.	August 1964-August 1968.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
5. Reading Disorders in Relation to Poverty and Crime Santa Barbara, Calif.	Work Training Program, Inc.	Dyslexic[3] youth and adults, men and women, in a job training program for the hard-core unemployed; others in a continuing education class and in a high school for delinquent boys. Spanish-speaking, blacks, and whites. Most tested at sixth-grade or lower reading levels.	To determine the extent of dyslexia, through clinical observation and testing, and demonstrate effective methods for dealing with the problem; development of self-esteem. Neither a diagnostic instrument nor related systematic methodology for treatment resulted, but researchers confident that project alerted education and manpower practitioners to significant incidence of dyslexia (22 percent in the job training program) and showed that proper teaching methods result in good reading gains, long-term gains in improved employment.	December 1964-August 1967.
6. Training and Technology (TAT) Oak Ridge, Tenn.	Oak Ridge Associated Universities, Inc.	Mostly young, mostly disadvantaged individuals, including blacks (35 percent), women (5 percent), a few dropout-prone high school students. Three-fourths high school graduates, but beginning scores on achievement tests averaged grade 7.3 in reading and 7.9 in math.	To prepare trainees for jobs in modern, technology-based industry through a program of shop training and related academic instruction, using industrial facilities and equipment and journeymen as teachers. Basic education, especially preparation for the GED, and counseling are important aspects of this project, which has had an outstanding record of job placement. Instruction flexible, individualized. Job Corps and other materials are used in learning laboratory.	March 1966-November 1974.

Footnotes at end of table

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
7. Basic Education in the Manpower Process Trenton, N. J.	United Progress, Inc. (Community Action agency).	NYC out-of-school enrollees. Average trainee: 17 years old, 10th-grade dropout, reading at 6th-grade level, with 5th-grade math skills.	To link area manpower programs by, among other devices, remedial academic instruction to prepare NYC enrollees for vocational training and/or jobs. Impressive average gains in reading (1 grade) and math (1.9 grades) reported from short instructional period (less than 8 weeks), using commercial materials and nonprofessional teachers.	June 1966-December 1967.
8. Project Challenge Lorton Youth Center[1] Washington, D.C., Metropolitan area	National Committee for Children and Youth.	Young (mostly ages 19 to 22) black male offenders. Largely high school dropouts. Average grade completed: 9.1. Average score, Stanford Achievement Test: 6.5.	Vocational training and coordinated remedial education, along with counseling, job development, and placement services designed to break cycle of poverty and crime. VISTA workers used as tutors. Efforts to reinforce progress with rewards and recognition.	July 1966-January 1968.
9. Secretarial Training with Speech Improvement New Orleans, La.	St. Mary's Dominican College.	Disadvantaged women, mostly black high school graduates, about half with dependent children. Averaged 10.4 grade level on California Achievement Test. Speech deemed job handicap by interviewers.	To prepare trainees for well-paying secretarial jobs through teaching business speech as a second language (and encouraging retention of accustomed speech for use at home). Used many tests, methodology of foreign-language laboratory. Other components were remedial English and counseling. Good job placement record; only 24 percent of first group, 15 percent of second went to racially segregated industries.	September 1966-September 1967. (Continuing with local school and business support).

Footnotes at end of table.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
10. Project PEACE[1] Cleveland, Ohio	Catholic Church, Diocese of Cleveland.	Inner-city residents, men and women, aged 22 to 40 plus, two-thirds on welfare; median grade of school completed, sixth.	Basic education an important component of total effort to develop occupational potential. Used TV, audiovisual tapes, reading pacers, other hardware. Stressed testing, both for diagnosis and experience gained by trainees. Used instructors from business and industry; some tutoring. Claimed median gain of 5.1 grades in achievement level over 20-week period.	April 1967-September 1968.
11. Basic Occupational Language Training Program (BOLT) New York, N.Y.	Puerto Rican Forum, Inc.	Low-skill, low-wage Spanish-speaking youth and adults lacking knowledge of basic English.	To design and demonstrate tools to teach job-oriented English to the Spanish-speaking (and Spanish to the English-speaking) to facilitate job entry and subsequent advancement. Featured highly empathetic teachers, skilled in audiovisual and audiolingual techniques; curriculum based on job-related vocabulary; flexible, individualized delivery system. Evaluation and followup show significant improvement in English-language skills, job promotions and wage increases for many enrollees.	September 1967-January 1971. (Utilization phase ongoing.)

Footnotes at end of table.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
12. Accelerated Learning Experiment Cincinnati, Ohio; St. Louis, Mo.; Pittsburgh, Pa.	Social Research Group, The George Washington University.[3]	NYC out-of-school enrollees, mostly black youth (both sexes) with an average age of 18 years and an average of 8.9 years of school.	Sought model for effective remediation of academic deficiencies, using methods and materials developed by Job Corps. Programed instruction taught in classes near worksites by noncertificated teachers achieved better results than conventional remedial education programs, but "model" did not result from project.	February 1968-November 1969.
13. Upgrading Educationally Disadvantaged Employees Through After Hours Education Nashville, Tenn.	Vanderbilt University.	Forty-five low-level employees of Vanderbilt University, mostly women, with fourth- to sixth-grade reading and math achievement as measured by Form W, Stanford Achievement Test, and IQ's as low as 60, as measured by the Lorge-Thorndyke Non-Verbal Intelligence Test. All enrollees were volunteers.	To test feasibility of preparing enrollees for better jobs through improving academic skills, using a commercial program in after-working-hours classes. Programed instruction, tape recorders used. Average gains of 2.2 grades in first cycle and 1.3 grades in second cycle may have been inhibited by monitors' failure to facilitate intended self-pacing. Substantial job advancement followed.	May 1968-June 1970.

Footnotes at end of table.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
14. Jobs, Education, and Training Western New York State	State University of New York at Buffalo.	Typical enrollee a black adult man in prime working age group with dependents. Average years of school completed, 8.7. Extensive low-wage, unstable work experience; mostly unemployed.	A forerunner of NAB-JOBS Program. Classroom training regarded by project administrator as most critical component of the package of services offered; given at jobsites 2 hours per day (which employers found disruptive). Overall, project outcome not very positive.	September 1968-April 1972.
15. Experimental Manpower Laboratory for Corrections (EMLC) Montgomery, Ala.	Rehabilitation Research Foundation.	Developed with inmates of Alabama correctional institutions. In use in correctional institutions in South Carolina, Georgia, Kentucky, and Pennsylvania	EMLC does extensive research in offender rehabilitation, including work in ABE. Developed an Individually Prescribed Instruction (IPI) system for basic math and language arts and an Individualized Reading Instruction System (IRIS). Stresses testing, programed instruction, use of learning center.	September 1968-(scheduled for) March 1975.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration--Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
16. Fulfilling the Potential of NYC-2: Integrating Remedial Education into Neighborhood Youth Corps Training Programs New York, N.Y.	Mobilization for Youth, Inc. The Experimental Manpower Laboratory.	Disadvantaged school dropouts enrolled in the NYC program; reading and math achievement scores clustered between third- and fourth-grade level. About a third were Spanish-speaking youth who were taught English as a second language.	Experimented with different approaches to ABE, beginning with voluntary, unstructured program. Moved to half-time remedial education, half-time work training with diagnostic testing and effort to offer "learning experiences which have been selected and programed to guarantee the individual trainee immediate success in a highly structured learning environment." Conclusions include: Significant improvement in reading cannot be obtained in relatively short (7-month) period for individuals of low achievement; voluntary general education program after a full day's work or training lacks holding power; non-English-speaking trainees should be made literate in native tongue before they are taught English; educational goals and instruction should be linked to vocational goals and instruction.	December 1968-(scheduled for) December 1974.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
17. College Adapter Program (CAP) New York, N.Y.	City University of New York. (Currently operated by the Higher Education Development Fund.)	Selected out-of-school NYC enrollees; high school dropouts, mostly blacks and the Spanish-speaking. High school diploma-holders, unprepared for college, added in course of project.	To prepare enrollees for college entrance through a program of remedial education, financial support, and counseling and supportive services. Tutoring center used. Prepares most enrollees to begin college study in 22 weeks; those with less than 8.5 reading and 7.5 math achievement at entry take longer.	March 1969-July 1972. (Continuing under funding supplied by the New York City Department of Employment.)
18. Nashville Concentrated Employment Program: Literacy Nashville, Tenn.	Norman A. Buktenica in collaboration with Nashville CEP. Tennessee State University.	Persons enrolled in basic education in the local CEP.	To replicate and check the Santa Barbara experience (see project 5), using battery of five screening tests. Aborted by inability to recruit sufficient number of trainees with low reading levels and failure to identify dyslexics.	August 1969-January 1971.
19. SNAP-SMART II Wilkes-Barre, Pa.	Educational Computer Corp.	Disadvantaged individuals with zero to fourth-grade reading achievement, eligible for MDTA training allowances; 12 percent on welfare.	To teach technical skills without reliance on reading. Used SMART simulator for skill training, but also gave daily remedial academic instruction, coordinated with skill training. Sixty-eight percent of enrollees completed course, of whom 81 percent were placed at average wages ranging from $2.21 per hour (automotive repair) to $2.68 per hour (heating services).	September 1969-April 1972.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; Special features	Date started and completed
20. Longitudinal Study of NYC-2 Programs Atlanta, Ga.; Baltimore, Md.; Cincinnati, Ohio; St. Louis, Mo.	Manpower Research Projects, The George Washington University.	Out-of-school NYC enrollees, predominantly black, under 18 years of age with less than 10 years of school completed and no vocational preparation. Half women, half of them mothers. (Also, control groups matched for demographic and socio-economic characteristics.)	The study will provide followup data on NYC-2 enrollees, 1 and 2 years after enrollment. Will also compare NYC-1 outcomes with those of NYC-2, in which remedial education is a necessary component of individual employability plans.	May 1970-(scheduled for) December 1974.
21. Remedial Education Programs in the Paper Industry Five southern paper mills in Louisiana and Georgia	Wharton School of Finance and Commerce, University of Pennsylvania	Blacks in laborers' jobs barred by tradition and other factors from moving up progression ladder. Largely illiterate but in stable, relatively well-paid jobs, highly regarded in the workers' communities. Most were older adults; one group had median age of 42.	Adult basic education made available in effort to be responsive to civil rights legislation. Two commercial programs used (one at three sites, the other at two sites). Each failed to bring many enrollees to academic levels (about sixth or seventh grade) adequate for job promotion. Failure may be attributable to such factors as inappropriateness of materials for rural, southern blacks; program participation not tied directly to promotion; very low achievement levels at start of training; general apathy about program participation (target population satisfied with job status).	September 1970-May 1972.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
22. NYC-2 Goes to a Community College St. Louis, Mo.; Chicago, Ill.; Denver, Colo.; Imperial, Calif.	Evaluation Technology Corp.	Out-of-school NYC-2 enrollees, boys and girls, high school drop-outs with an average of less than 10 grades completed and a median age of 16.6 years, many with dependents. Blacks, whites, and the Spanish-speaking.	Tested programs in which enrollees were placed on college campuses with regular students for a planned schedule of work and study or full-time study in order to develop model program for selected NYC enrollees. Counseling and tutoring included. Had benefit of college learning labs and individualized basic education instruction, as needed. Majority of enrollees made new career plans, subsequently succeeded in college courses.	November 1970-August 1973. (Growing out of similar projects for in-school enrollees in the summers of 1968-1970.)
23. Basic Education in Manpower Training Programs	Bureau of Social Science Research, Inc. Washington, D.C.		Survey of the extent and nature of basic education in 2,700 projects in nine manpower programs in May 1970. (See app. D.) Intended for use of administrators and managers of manpower training programs.	January 1971-September 1972.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
24. Individualized Manpower Training Systems Montgomery, Ala.	Technical Education Research Centers, Inc.	Staff teaching disadvantaged enrollees at a number of demonstration sites in Florida, Alabama, Georgia, and California, including community colleges, technical schools, an MDTA skills center, and youth correctional institutions.	Modifying and expanding the programs developed by the EMLC and applying the techniques not only to academic skills but also to personal and social skills and occupational exploration. Provides packages of step-by-step how-to-do-it staff training for setting up and operating an individualized manpower training system.	January 1971-June 1974.
25. New Education Program (NEP) California locations: San Francisco, Orange County, Compton, Santa Barbara	Graham Associates, Inc.	Typical NYC out-of-school enrollees; ethnic mixture of blacks, Chicanos, Asians, and some whites.	NEP was devised as alternative to remedial education NYC-2 enrollees were receiving under a variety of auspices and in different settings; e.g., continuation schools, adult evening classes, special schools. Based on Job Corps Programed Learning System. Used many games to supplement Job Corps materials. Attention to arranging for high school credits and to NYC administrative arrangements.	February 1972-March 1973.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
26. Development of a Model for NYC-2 Education Programs	Manpower Research Projects, The George Washington University. Washington, D.C.		A projected guide for NYC out-of-school administrators and teachers. Based on: (a) Review of literature; (b) review of ongoing programs in four Job Corps Centers; a camp for delinquent youth; a school serving enrollees in a manpower training program; (c) ongoing research; and (d) special research directed to specific questions.	May 1972-August 1974.
27. Manpower Revenue Sharing and Educational Programming Varied California locations and Spokane, Wash.	Graham Associates, Inc.	Enrollees in an MDTA skills center; two youth detention centers; two NYC-2 projects; a precontinuation program for ninth grade.	To test whether NEP can succeed in such varied settings for manpower programs as characterize manpower revenue sharing. Builds on earlier project.	July 1973-(scheduled for) January 1975.
28. Study of the Effectiveness of Project 27	Manpower Research Projects, The George Washington University. Washington, D.C.		Will assess the effectiveness of the above project by examining the variations in achievement which might be due to students, site, and other program variables.	August 1973-(scheduled for) April 1975.
29. Study of the Effectiveness of Project 25	Manpower Research Projects, The George Washington University. Washington, D.C.		"Substantial NEP achievements gave promise that the effectiveness of NYC-2 education could be enhanced through utilization of the NEP model." But not all students profited due to a variety of circumstances and causes.	August 1973-(scheduled for) April 1975.

A. Research and Development Projects and Studies Involving Adult Basic Education, U.S. Department of Labor, Manpower Administration—Continued

Project and location	Contractor	Experimental group	Objectives; special features	Date started and completed
30. Developing Task Models for the Validation of the Basic Occupational Literacy Test	American Institute for Research. Pittsburgh, Pa.		The employment service devised the Basic Occupational Literacy Test to measure the minimum skills in reading comprehension, reading vocabulary, arithmetic comprehension, and arithmetic reasoning needed for success in a variety of jobs and skill training. Project seeks to develop an economical method for validating the test against job performance. Intended for use of Department of Labor staff concerned with further validation of the test.	January 1974-(scheduled for) January 1975.

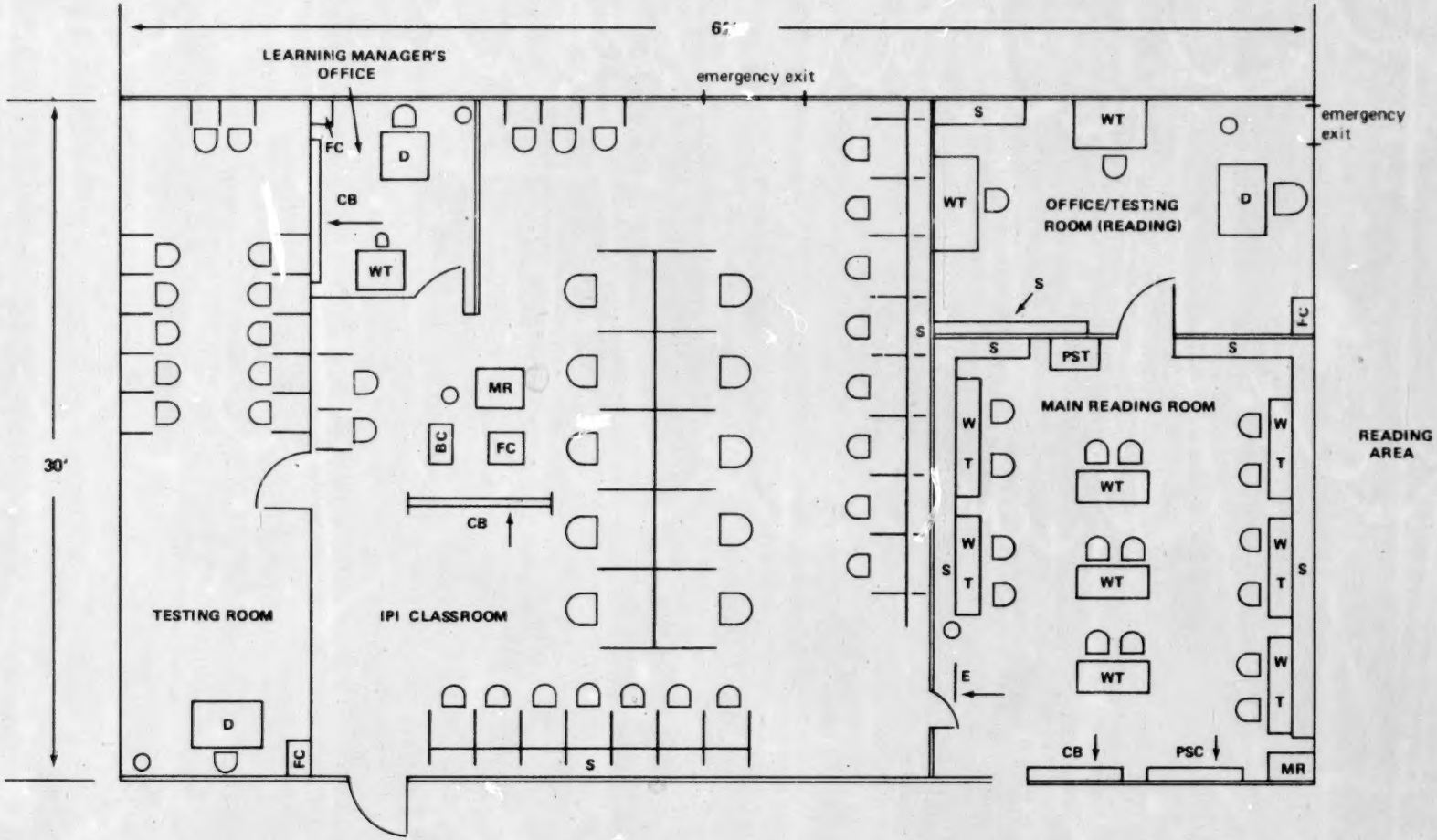
[1] Jointly sponsored with the U.S. Department of Health, Education, and Welfare.

[2] Dyslexia is a neurologically based reading disorder not amenable to remediation through usual methods of instruction.

[3] Predecessor of Manpower Research Projects, The George Washington University.

B. The Learning Resource Center

(as developed by Technical Education Research Centers, Inc. (TERC's), 312 Montgomery Street, Montgomery, Ala.)



KEY TO FURNISHINGS:

BC	- Book Cart	MR	- Magazine Rack
CB	- Chalk/Bulletin Board	PSC	- Projection Screen
D	- Desk	PST	- Projection Stand
E	- Easel	S	- Shelving
FC	- File Cabinet	WT	- Work Table

SYMBOLS:

- — Chair
- — Carrel
- — Trash Container

NOTE: This is one of four model floor plans for a center. It is perhaps the most elaborate of the four and the most expensive to operate since it implies a larger staff than do the others. While this model shows five separate rooms for various specialized activities, another suggested model makes provision for all activities in one large room (25 feet by 26 feet).

C. Staff Training Packages for IMTS[1]

Preplanning Package

A. Trainer's Guide

B. Overview of the IMTS
   1. Printed Version
   2. Tape/Slide
   3. Brochure on IMTS

C. Justification Information
   1. Questionnaire
   2. Summary of Estimated Budget Requirements
   3. Formative Assessment and Management (FAM) Purposes and Overview
   4. Analytical Inventory Forms for Available Resources

D. Description of Staff Training
   1. Script
   2. Transparencies
   3. Samples of Workshop Agendas
   4. Chart of Staff Training Plan

E. Chart of Funding Resources

F. Commitment Checklist

G. Application for Staff Training

Orientation Workshop Package

A. Agenda (Sample)

B. Discussion Guide

C. Tape/Slide Overview

D. Description of IMTS Component Programs

E. Prescribing Exercise
   1. Tape/Slide
   2. Printed Samples of Set

F. FAM Rationale

G. Suggested Floor Plans
   1. Printed
   2. Transparencies

H. Requirements for Preservice and Inservice IMTS Staff Training

I. Component Program Prescribing Catalogs and Guides (Reading, Language, Artthmetic, Work Sampling, and Complementary Skills)

J. Budget Specifications

K. Achieving Individualized Motivational Systems (AIMS)
   1. Tape
   2. Forms

Establishing Workshop Package

A. Agenda (Sample)

B. Expected Outcomes Chart

C. Establishing Guide

D. Blank Establishing Forms for the Management Plans
   1. Administrators
   2. IMTS Staff

E. "Boiler Plate" (Narrative Proposal)

Preworkshop Assignments Package For Operating

A. Assignments and Discussion Guide

B. Copies of Component Programs for Staff Training (Complementary Skills and Employability Behaviors)

C. Operating Guides
   1. Complementary Skills
   2. Language and Arithmetic

D. Task Analysis for the IMTS

E. Concept Papers
   1. Toward an IMTS
   2. Work Sampling

F. Description of the IMTS

G. FAM Introduction

H. Demonstration Recommendations

Operating Workshop Package

A. Agenda (Sample)

B. Assessment Instruments

C. Trainee Orientation
   1. Printed Script
   2. Tape/Slide

[1] Available from Technical Education Research Centers, Inc., 44 Brattle St., Cambridge, Mass. 02138. A final report on the project was issued in July 1974.

Operating Workshop Package – Continued

D. Case Study Set (Introduction – Interviewing, Diagnosing and Testing, Prescribing, Managing, and Evaluating)
   1. Tape/Slide
   2. Printed Programed Modules

E. Operating Guide for Reading

F. Reading Programed Module

G. Sample Case Exercise for Complementary Skills

H. Employability Behavior
   1. Tape/Slide
   2. Sample Case Exercise

I. AIMS Leader's Guide

J. AIMS Participant's Manual

K. AIMS Set of Tapes

L. Tape/Slide "Programing Is a Process"

M. FAM Study Guide

N. IMTS Task Assignment Forms

O. Prescribing Catalog

P. Tests of Adult Basic Education (TABE) and Answer Forms

Q. Self-Directed Study List with Progress Chart

R. FAM Action Line Form

Two-Week Internship and Inservice Training Package

(Use materials from Operating Workshop Package as references.)

A. Assessment Instruments Performance Checklist for Self-Assessment and Monitoring

B. Programed Instruction (PI) Process and Products Programed Module
   1. Tape/Slide
   2. Workbook
   3. Printed Programed Module

C. Exercise on Correlating Materials for Prescribing Catalogs

D. Exercise on Evaluating and Selecting Programs for the IMTS

E. Self-Directed Study Checklist

F. Agenda for "Sharing Conferences" for IMTS Staff

D. Excerpts from Summary of Basic Education Services in Manpower Training Programs

(A Report from the National Inventory of Manpower Programs by Gene B. Peterson and Thomas F. Drury, Bureau of Social Science Research, Inc., Washington, D.C., September 1972)

While basic or remedial education has been authorized as an ancillary training activity by the legislation supporting major Federal efforts in manpower training, no prior systematic and comprehensive information has been available regarding the extent and costs of basic education services, the contexts in which basic education services are provided, and the material and human resources used in providing these services. . . .

To fill this gap, . . . the Bureau of Social Science Research, Inc., . . . has conducted a two-stage mail survey of basic or remedial education services in manpower training programs. In Stage I of the survey, a brief screening questionnaire was mailed to DOL-funded projects in the MDTA programs, the NYC programs, WIN, Operation Mainstream, CEP, and New Careers. . . . Information was obtained from these projects regarding the inclusion of basic education as a project component, and . . . the cost to the contract for these services. . . .

Stage II of the survey consisted of a mailing to a sample of projects, of which about half provided basic education, and to a sample of basic education units responsible for providing services to the projects in the study.[1] The questionnaire . . . provided more detailed information for over 2,000 projects regarding both their organizational characteristics and factors bearing on the decision to include or exclude basic education. . . . The questionnaire sent to the basic education units provided . . . similarly detailed information regarding curriculum offerings, scheduling practices, instructional materials, equipment, teaching techniques, testing, and staffing problems. . . .

[1] A sample of JOBS contractors was included in the Stage II mailing. The Job Corps was not included in the survey. Where available from Department of Labor files, comparable information about Job Corps projects has been included.

Providing Basic Education Services for Trainees

For purposes of the study, basic or remedial education was defined as "instruction, other than in preparation for specific trades or occupations, in reading, writing, oral communication (including English as a second language), and math-arithmetic up through the 12th grade or GED level." . . . Roughly half of the (approximately 6,000) manpower training contracts that were funded, staffed, and serving clients during the last week of May 1970 had made provision for basic or remedial education for program participants.

Overall, 47 percent of the projects providing basic education services reported that *all* of their trainees passed through a basic education sequence. . . . In projects in which only selected individuals are placed in a basic education sequence, a substantial portion (20 percent overall) reported that all trainees needing remediation or basic education were provided with that experience. . . .

. . . Basic education in manpower training programs typically appears to consist of about 200 hours of instruction, most often conducted by a teacher in a classroom setting for a group of 10 to 24 learners with the teacher individualizing instruction to meet the particular needs of different learners. Substantively, the instruction seems to be about equally divided between language and number skills with a scant margin left over for other subjects, such as job orientation, consumer education, cultural enrichment, or racial and ethnic group history.

Factors Leading to Provision of Basic Education

In WIN, New Careers, NYC out of school, and to a slightly lesser extent the Concentrated Employment

Program, basic education services are available in almost all projects. In MDTA-OJT, on the other hand, basic or remedial education services are seldom provided. . . . In the MDTA institutional and JOBS Programs, however, where projects have exercised discretionary control over provision of basic education services . . . it appears that basic education is provided in response to need, not out of regard to categorial conditions of the trainee population, such as age, sex, or racial or ethnic status.

Basic education services are also more likely to be available to trainees if the sponsoring organization is organized to provide comprehensive manpower training services (including training in a wide variety of occupations) than if the organization operates a more restricted program. . . .

The Cost of Basic Education Services

Estimated Total Cost of Basic Education

The best estimates we have of the total cost of basic education in the nine manpower training programs surveyed comes from the Stage I data. . . . According to those estimates, supplemented by a considerably rougher guess for the JOBS Program based on the replies received from basic education suppliers to that program in Stage II, the "total" cost of basic education is about $94 million. If the JOBS estimate is taken as conservative, the true figure probably runs somewhere just above $100 million. Under the conservative estimate . . . in the JOBS Program, that program still accounts for the largest share of the total basic education expenditure for fiscal 1970. Second, third, and fourth places go to MDTA institutional, WIN, and the Concentrated Employment Program, respectively. . . .

Costs Per Trainee

The reported basic education investment per trainee ranges rather widely within and among programs. The lowest median cost of basic education per trainee ($100) is in the NYC out-of-school program. This same program is also the most homogeneous with regard to the cost of basic education per trainee. Three-quarters of the projects reported that they spent under $200 per trainee for basic education. The highest median cost of basic education per trainee ($450) was in the JOBS Program. This median is about two-thirds greater than the reported median for all projects.

The Structure of Basic Education Programs

Type of Organization Providing Basic Education

Overall, projects obtained basic education services from a fairly wide range of sources, but within . . . programs there was considerably more uniformity. JOBS sponsors, for example, tended to turn to their own organization or some other supplier in the private sector for their basic education services. MDTA institutional and the Concentrated Employment Program more often obtained that educational services from skills centers or other centralized manpower training facilities than from any other type of supplier. WIN projects tended to turn to either the public school system or a specialized public basic education center.

Use and Evaluation of Technical Assistance

In the main, the basic education unit supervisors reported that the technical assistance available to them and their staffs was adequate or that no assistance was needed. A third or more of the supervisors noted that better assistance was needed to cope with providing inservice training, curriculum development, setting participant occupational goals, and placement testing. . . .

There is a strong tendency for basic education supervisors to seek assistance from sources that are near at hand. Three-quarters of the basic education supervisors had sought and obtained technical assistance from their own State office of adult or vocational and technical education. And 3 in 5 of the suppliers claimed to have obtained technical assistance from each of two other suppliers: adult education specialists in their local school system and specialized divisions or headquarters units of their own organization.

The Volume of Learners

The volume of manpower program trainees passing through basic education units in a year is not large. Overall, the median reported number of trainees in basic education was just over 100. . . . The programs account-

ing for the largest expenditures also serve the largest numbers of participants. . . . While this seems obvious, it need not necessarily be so. The cost data could be confounded, for example, by programmatic decisions to engage in more intensive remediation.

Scheduling Instruction

While basic education is scheduled so that trainees have great flexibility in gaining access to basic education instruction, they have far less control over the amounts of instruction provided by the schedule. Overall, about 4 in 5 supervisors of basic education units reported that newcomers could be accommodated at any time or would have to wait only a week at most to enter basic education programs. . . . almost half of the suppliers reported utilizing a schedule in which both the minimum and the maximum number of hours of attendance was specified.

In relation to other components of the training program, basic education instruction is most commonly scheduled to take place concurrently with skills training and work, although in every funding program substantial portions of the projects use other schedules. Among CEP and WIN projects, however, basic education is most often scheduled as a preliminary program activity to be completed or nearly completed before assignment to work or skills training. Since clear majorities of all except the WIN projects reported that basic education overlaps skills training and work assignments to some extent, most basic education units have the opportunity to provide instruction of distinct relevance to the jobs or training actually being experienced by their learners.

Providing Basic Education for Specific Occupations

The extent to which basic education is actually tailored to fit the duties of intended occupations is difficult to judge (if only because of the absence of an agreed upon set of criteria by which to judge relevance). There does not appear to be a general or widespread effort to tailor the content of basic education *closely* to the requirements of specific occupations, though fairly large proportions of the projects in each program try to provide basic education of some relevance to specific occupations. . . .

Curriculum Content

By definition, the services provided by basic education units must include instruction in either number or language skills, and generally both are provided. Other substantive areas most commonly used as part of the basic education curriculum are: job orientation, consumer education, cultural enrichment, and racial or ethnic group history.

The GED Test as a Curriculum Target

Overall, about two-thirds of the suppliers reported that the intended objective of their program is to prepare participants for the General Educational Development (or GED) test. In this regard, however, there is considerable variation across programs. In NYC out of school, WIN, New Careers, the Concentrated Employment Program, and Operation Mainstream, three-fourths or more of the suppliers have successful preparation for the GED test as a curriculum goal. But only a fourth or less in JOBS, NYC in school, and the MDTA-OJT programs reported having completion of the GED test as a curriculum objective.

Materials and Equipment Used in Basic Education

Selection of Instructional Materials

For the most part, instructional materials are selected by those closest to classrooms: the individual teacher, a teacher in charge, or a basic education program supervisor. There is some consensus among supervisors of basic education in manpower programs that in selecting teaching materials they look for clearly presented materials, written for adults, with substantive content and vocabulary or problems of immediate relevancy to work and the everyday lives of their learners. These were the top four themes, each designated by two-thirds or more of the respondents as being "very important" or "essential" considerations in selecting instructional materials.

Commercially Available Materials Used to Teach Number Skills

Respondents were asked to indicate the amount of use they made of each of 14 sets of materials comprising

a provisional list of the most widely used teaching materials in number work. Of the 14, the most popular item was McGraw-Hill's *Programmed Math for Adults*, a series of nine workbooks focusing upon basic computational skills. The texts are divided into programmed lesson units so that the student can work at his own pace, but require an instructor to administer and evaluate tests and to provide individual remedial assistance. . . . Overall, these materials were used by 46 percent of the suppliers. . . .

Commercially Available Materials Used to Teach Language Skills

Respondents were also provided with a provisional list of the most widely used teaching materials in language skills and asked to indicate the amount of use they made of each. Of the 16 on the list, Readers Digest's *Skill Builder Reading Program* and McGraw-Hill's *Programmed Reading for Adults* were the most popular. The Readers Digest materials were used by over half of the suppliers, and the McGraw-Hill materials by over two-fifths. . . . Each set of materials is designed for self-pacing and yet requires an instructor to monitor progress and assist with remediation. . . .

Occupational Specificity of Basic Education Materials

Well over half of the basic education supervisors . . . say they supplement general curricular materials with others of particular relevance to specific occupations. At most, only a fifth of the basic education supervisors (in the MDTA institutional program) said that they relied solely on materials specific to particular occupations.

However, the job-related relevance of the supplementary materials used is spotty. Over two-thirds of the total number of basic education supervisors indicated that newspapers, magazines, materials related to job applications, want ads, and work instructions were used to broaden the content of the basic education course. But only a third, overall, indicated that they had used manuals for the operation or repair of equipment as instructional media.

Use of Multimedia Teaching Aids

Relatively few basic education units appear to have acquired sophisticated instructional hardware systems. Overall, two-thirds or more of the suppliers used basic audiovisual equipment such as sound movie projectors, tape recorders, film strips, overhead transparency, or slide projectors. Fewer than half used more specialized items such as electronic pronunciation aids, reading machines, or tachistoscopes. Only about a fifth said they were using television receivers or had access to closed circuit television. . . .

Measures of Progress

Intake Testing

On the face of it, project directors seem to share the ambivalence of the broader educational community regarding the appropriateness of testing to measure levels of achievement in work or number skills among populations such as those that comprise the clientele of manpower training programs. Just under half of the project directors said that, at intake, they made any use whatsoever of any sort of achievement tests. . . . Where basic education was not provided, achievement testing was seldom used.

Other Use of Tests

Overall, more than half of the suppliers reported that they routinely administer achievement tests to obtain measures of trainee progress. And over half of those who use such tests also reported that they have separate test data for achievement in reading and in number skills. But the prospects for acquiring comparable performance scores across programs (or within them, for that matter) appear remote. No one standardized test is widely used within or among programs. Overall, staff-developed diagnostic and achievement tests are those most frequently used. However, three commercially available tests are used with appreciable frequency: The General Aptitude Test Battery (GATB) of the U.S. Employment Service, . . . the California Achievement Test in Reading, . . . and the California Achievement Test in Arithmetic. . . . The extent of repeated use of the same test on the same subjects is also extremely limited. . . .

Methods Used to Determine Completion of Study Units

Almost invariably, the instructor decides when a major unit of instruction has been successfully com-

pleted, usually on the basis of classroom performance, evaluation of exercises or assignments, or performance on a test that he or she devised. Standardized tests (though seldom the same ones, it would appear) are also used to determine successful completion of study units . . . .

Amount of Instruction to Advance One Grade Level

In absolute terms, with the median hours of instruction used as a point of comparison, it takes first-grade-level entrants 119 hours of instruction to advance one grade level in overall achievement, 111 hours to advance a grade in reading, and 103 hours to advance a grade in number skills. Participants entering at the sixth-grade level require less time to advance one grade level: 106 hours for overall achievement, 90 hours for reading, and 78 hours for number skills.[2] Eighth-grade-level entrants require 97 hours overall, 73 for reading, and 68 for number skills. The equivalent of a year's progress for 10th-grade-level entrants requires 83 hours overall, 65 hours for reading, and 64 hours for number skills. Holding type of achievement constant (that is, comparing entry levels within each type of achievement) in each instance, the median hours of instruction required to advance one grade level decreases with entry level. Holding level of entry constant (that is, looking separately at the medians for each of the entry levels across achievement types), it is evident that it takes longer to advance one grade level in overall achievement than in reading achievement, and longer to advance a grade level in reading than in number skills.

The Staff of Basic Education Units

In broad terms a typical basic education unit would consist of six or fewer persons, half of whom would be instructors with the remainder consisting mainly of counselors. Nearly all are employed directly by the organization providing the basic education services (rather than being on loan from some other group) and most are on continuous appointments. About half of the staff work full time for the project; most of the part-time workers put in less than 20 hours a week. . . . Most are in positions requiring State or local certification and most have the certificates required. Two-thirds have college degrees. About two-fifths are professionals and another two-fifths are paraprofessionals or non-professionals engaged in activities calling for some professional training. While the sexes are evenly represented, 70 percent are white, a quarter are black, and only 5 percent are from other minority groups.

Problems in Staffing Basic Education Units

The quality of work performed by projects is largely dependent on the qualities of the staff. The capacity of a project to achieve a desired staffing pattern depends on the existence of a ready reserve of qualified candidates for staff vacancies and is affected by problems encountered in recruiting, retaining, or discharging staff members. Each of these aspects of staffing was explored in a portion of the questionnaire addressed to basic education unit supervisors as well as in the questionnaire addressed to project directors.

Perhaps as a reflection of current oversupply of elementary and secondary teachers, basic education supervisors were more likely than project directors to have a ready reserve of applicants for staff positions. Three-fifths of the basic education unit supervisors . . . reported that they had a file of candidates to fill future vacancies.

Basic education unit supervisors agreed with project directors that, with respect to hiring, holding, and firing, recruitment is the most serious problem in staffing. However, in ranking severance of redundant or unproductive staff as a greater problem than holding their staff, supervisors disagreed with the project directors.

Ten specific areas were probed as potential trouble spots with respect to recruiting or retaining superior quality staff members. Among both basic education unit supervisors and project directors, uncertainty of future funding was clearly the most commonly cited staffing problem. And, among both groups, the next two most often cited problems were the amounts available for salaries and the lack of opportunities for advancement. . . .

[2] Because the general, or overall, basic education curriculum commonly includes other elements, the times required to advance one level in the total curriculum exceed those required to advance in specific components.

E. The Job Corps Programed Learning System[1]

(Based on *Developing an In-House Education Component for NYC-2 Projects* by William J. Enright and Gary S. Graham, Graham Associates, Inc., Lafayette, Calif., April 1973)

The Job Corps curriculum covers the general areas of reading, mathematics, and advanced general education, that is preparation for the GED.

Reading. There are three curriculum sections, as follows:

Beginning reading for students with skills in the 0-3.5 grade level range.

Intermediate or graded reading, with eight sublevels, for students with skills in the 3.5-7.5 grade level range.

Advanced reading, with seven sublevels, for students with skills above the 7.5 grade level.

Students are placed in a section in accordance with scores on a 13-minute preliminary placement test developed by Job Corps (referred to as RJS-1). Graham Associates found this screening test to be very accurate.

Job Corps uses the Sullivan Associates' *Programmed Reading* Series, books 1 to 14, for students in beginning reading. (In the researchers' judgment, the series has many strengths but is too juvenile a format for teenagers. They recommend substituting Sullivan Associates' *Programmed Reading for Adults.*)

For the graded reading program, Job Corps has developed lists of approximately 225 titles of published materials for each sublevel. Students make their own selection of 14 titles from each list.[2] To guide their selections, Job Corps has prepared a master index of all the approximately 1,800 titles, by level and subject matter. Each level includes selections relating to such subjects as science, science fiction, sports, hobbies, and jobs. The system permits students to make perceptible progress on an almost daily basis ("success reinforcement") and allows the teacher flexibility in working individually with the students, the researchers say.

The format for the advanced reading program is similar to that for graded reading except that students need complete only seven selection for each level.[3] Generally, students at this level read well enough to work simultaneously in the GED preparation program. They may move out of this program into full-time GED work at the discretion of the teacher.

The initial cost of a set of reading materials to equip a classroom serving up to 75 students is approximately $900. Only the beginning reading materials are consumable by a group of students; the remainder may be reused indefinitely.

Mathematics. Job Corps has recently revised its entire mathematics curriculum. Graham Associates used largely the new materials in their project.

A 25-minute math placement test (MJS-1) has been developed by Job Corps. It checks skills in whole numbers, fractions, decimals, percentages, and measurement. A second test (MJS-2) is administered to low scorers on the first test in order to identify deficiencies in whole number computations. More detailed diagnostic tests are administered to groups placed in specific levels within the math program, e.g., a test of fractions, and individual learning prescriptions are then developed.

[1] Additional information on the Job Corps program is available from the U.S. Department of Labor, Manpower Administration, Job Corps, Patrick Henry Bldg., 601 D St., NW., Washington, D.C. 20213.

[2] Among the publishers are Science Research Associates (*Dimensions in Reading, We Are Black, Countries and Cultures, American Album,* and *Manpower and Natural Resources*); Golier (*Reading Attainment,* levels 1 and 2); Bobbs-Merrill (*Merrill Modern Readers*); Readers Digest (*Skill Builders*); Educational Development Laboratories (*Controlled Reading Study Guides,* books 13 to 27); Noble and Noble (*Springboards*); and McGraw-Hill (*Step Up Your Reading Power*).

[3] The primary sources of materials are the Science Research Associates' *Reading Laboratory IV-A Kit,* supplemented by their *Better Reading,* books 1 to 3, and Educational Development Laboratories' *Controlled Reading Study Guide,* book 28.

Comprehensive tests conclude each unit to insure that the students have command of the skills presented.

The primary materials used[4] include a workbook and a problem book at each level. Job Corps has also developed supplementary materials, including the "Measurement Laboratory," an 11-unit series designed to give both practical experience in the use of various forms of measurement and vocational information.

A device used to sharpen skills is a series of 3-minute, 100-question speed checks in whole number computations. They are used in a "fun/competitive way."

The researchers comment that they found that the program meets its goal of bringing students to a sixth-grade performance level. The basic materials can carry students beyond this point, into personal math, consumer math, algebra, geometry, and trigonometry. The last three are covered in cursory fashion but give students good preparation for more advanced study.

The initial cost of a set of math materials to equip a classroom serving up to 75 students a day is approximately $850. All math materials are consumable and must be replaced for successive groups of students.

Advanced General Education (GED).[5] This curriculum, developed by Job Corps for the specific purpose of preparing students to pass the high school equivalency exam, also follows a programed format, allowing students to progress at their own speed. It consists of three levels, broken into various units, and further into 124 lessons. Instruction is offered in the five areas covered by the GED—math, English grammar, English literature, natural science, and social science.

Screening tests for each unit indicate whether a student has mastery of the unit's material. If he has, he skips the unit and proceeds to the next screening test. Each lesson ends with a mastery test, as does the entire unit. The researchers found that the program covers the subject matter of the GED exam well. (Many school districts give students high school credit for it.) However, students also need practice on the format and wording of questions to be encountered on the exam, to be gained from a "GED prep" text.[6]

Students in this program are generally the more advanced and better motivated. Nevertheless, their interest can flag while going through 124 booklets with the same format, so researchers advise the use of supplemental materials, varied with guest speakers and occasional trips away from the classroom.

Each set of the GED curriculum comfortably accommodates three pupils at any one time. The sets are reusable but will require periodic replacement.

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[4] The Sullivan *Programmed Math for Adults* series.

[5] Copies of the *Advanced General Education Program* are available from the Superintendent of Documents, U.S. Government Printing Office, Division of Public Documents, Washington, D.C. 20402 for $51.20 per set. Specify catalog No. LI.58/2:431 and make checks payable to the Superintendent of Documents.

[6] Such as Barron's *How to Prepare for the High School Equivalency Examination.*

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WHERE TO GET MORE INFORMATION

For more information on this and other programs of research and development funded by the Manpower Administration, contact the Manpower Administration, U.S. Department of Labor, Washington, D.C. 20213, or any of the Assistant Regional Directors for Manpower whose addresses are listed below.

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1100 Commerce Street Dallas, Tex. 75202	Arkansas Louisiana New Mexico	Oklahoma Texas
1961 Stout Street Denver, Colo. 80202	Colorado Montana North Dakota	South Dakota Utah Wyoming
450 Golden Gate Avenue San Francisco, Calif. 94102	Arizona California Hawaii Nevada	American Samoa Guam Trust Territory
1321 Second Avenue Seattle, Wash. 98101	Alaska Idaho	Oregon Washington